JULY, 1877.

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THE

# AMERICAN FARMER.

"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." . . . . . *Virg.*

**PUBLISHED BY SAML. SANDS & SON, BALTIMORE, MD.**

VOL. VI.—No. 7.] JULY, 1877. [NEW SERIES.

## Cecil County (Md.) Hay.

The following letter, which explains itself, was received some time ago, and was by us forwarded to Adam R. Magraw, Esq., of Cecil, with the request that he would submit it to the club of progressive and skillful farmers, of which he is a member, and ask their aid in giving our correspondent a full and satisfactory response.

This was kindly done, and we now give, without further comment, but with our expression of our own thanks and those of our readers to our Cecil friends for their obliging courtesy:

LORETTO P. O., ESSEX CO., VA.,
*March* 28, 1877.

*Messrs. Editors American Farmer:*

*Gentlemen*—Many farmers of this tide-water section begin to feel much interest on the subject of hay, believing that it will pay them better, on certain of their lands, than wheat or corn. They are deterred, however, from the experiment by an entire ignorance of the art of growing and curing. Will you, for the benefit of those who are anxious to introduce another variety to the crops grown here, procure from some intelligent Cecil county hay farmer, the art of raising and curing, and managing generally, first-class timothy hay for market.

We should like such information as the following:

What character of land is best adapted to timothy; how it is prepared for seeding, and how much seed per acre is necessary to secure a complete sod; how long this sod will generally last without reseeding; at what time the hay should be cut, and the process of curing, stacking, &c.; what fertilizers are used for top-dressing; what mowers and hay presses have been found the best, and what is considered a fair average yield per acre. Also, what time is best for seeding land for a permanent sod, and whether it is best to seed the timothy alone or with a grain crop; and whether, when a partial set is obtained, it will answer to sow fresh seed and harrow in without breaking the land afresh with plows, thereby injuring the grass already there.

I must apologize for troubling you with so many minute inquiries, but I know of no other means of obtaining the above information except through your invaluable columns, and the sincere interest you manifest in all attempts to advance the cause of agriculture, has tempted me to thus trespass upon your kindness.

By complying with the request contained in this letter you will lay under obligations many of your constant and appreciative readers, and among the number very sincerely

Yours, G. B.

---

COLORA, CECIL CO., MD., *May* 25, 1877.

*Messrs. Editors American Farmer:*

DEAR SIRS—I am at last able to enclose you what information I have obtained on the "art of raising and saving prime timothy hay as practiced in Cecil county."

I send you herewith the report of a committee appointed at the April meeting of Cecil Farmers' Club, and which was approved at its last meeting on the 23d instant. I deemed it advisable to ascertain the practice of several of our best and most successful farmers who are not members of the club, and I believe I have succeeded in getting together the cream of the art. To facilitate matters, I reduced "G. B.'s" letter to eleven questions, which I presented to the club, and sent to Messrs. Wm. Jas. Evans, Wm. R. Cooley, Jno. P. Evans, Wm. J. Preston and Jno. Hammersmith. I enclose you a copy of the questions, which I believe covers the ground of your correspondent's inquiry. If you find you have not space enough to print all I send, you might, after making your selections, send the originals to G. B., who will have, then, always at hand the advice of farmers who lead the van in intelligence, progress and success in their line, and who, with the rest of us, will always be glad to help our brother farmers of Virginia.

Hoping you will find my gleanings of use, and will pardon the length of time taken to gather them, and with best wishes for the success of G. B. and yourselves, I remain yours truly,

ADAM R. MAGRAW.

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COLORA, CECIL CO., MD., *April* 6, 1877.

MR. JOHN EVANS:

*Dear Sir*—The editors of the *American Farmer* have forwarded to me the following questions for answer, and they were sent to them by a farmer of Essex Co., Va., who is anxious to

have some light on the mystery and art of raising prime timothy hay—Cecil Co.'s brag crop. Knowing that you are one of our most successful farmers and hay-raisers, I take the liberty of addressing you on the subject, and feeling assured you will be able and willing to help the Virginia farmer, and hoping for an early reply, I remain very respectfully, yours truly,

ADAM R. MAGRAW.

QUESTIONS.

1. What character of land is best adapted to timothy?
2. How is it prepared for seeding?
3. How much seed per acre is necessary to insure a good sod?
4. How long will the sod last without reseeding?
5. When should the hay be cut, and how cured and stacked?
6. What fertilizers are used for top-dressing?
7. What mowers and hay presses have been found the best?
8. What is considered a fair average yield per acre?
9. What is the best time for seeding land for a permanent sod?
10. Is it best to sow timothy alone or with a grain crop?
11. If there is but a partial set, will it answer to sow fresh seed and harrow it in without plowing the land again,—thereby injuring the grass already there?

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REPORT OF COMMITTEE.

At a meeting of the Cecil Farmers' Club, held at the house of A. R. Magraw, the 25th of 4th mo., 1877, a letter was read from the editor of the *American Farmer*, relative to the practice adopted in this county of raising timothy and preparing the hay for market.

After each member in turn had given his experience and judgment, the most approved course of procedure was deduced as follows: If raising wheat be a necessary part of the routine of culture, as is generally the case here, the soil is prepared for the wheat and timothy at the same time. As an antecedent condition, the field should have been in tillage with potatoes, or some other hoed crop. Hungarian grass, when just harvested, leaves the ground in nearly as good condition. But the summer crop preceding the wheat is more frequently oats; and if care be taken with the plowing and culture, a good condition of the soil may be obtained after thus turning down oat stubble.

Lime and barn-yard manure are both used with good effect. But a yet more important element in the manuring is ground bone; if this be applied in the spring for the crop then planted, so as to be exposed to the decomposing heat and moisture of summer, it need not be dissolved. But if, on any account, the wheat has been sown without abundant manuring, a top-dressing in the fall or spring, of some good soluble commercial manure, will be likely to ensure the grass a vigorous growth, though it may not benefit the wheat.

To be most likely to secure a good set of the grass, the wheat and timothy should not be sown later than the 1st of 10th mo. If sown later, the young plants are liable to be killed by the severity of winter. Sowing timothy on wheat in the spring seldom succeeds. In fall sowing with the wheat, it should not be covered except with a smoothing harrow. The quantity usually sown is six quarts of seed per acre.

Where wheat is not a special crop, the soil may be prepared for timothy alone. In this case it should be sown soon as convenient after harvest, and may be expected to make a full crop the following summer.

All were agreed that a rather heavy soil, with clay below, was best for timothy; yet all were in the practice of raising it on all sorts of soil going to make the farms of Cecil, from the granite hills to the gravelly alluvium.

It is customary to sow clover on the wheat ground in the spring. The first year of the grass crop the hay is mixed, and it was thought that although such hay brings less per ton than pure timothy, the increased amount makes a greater aggregate profit. After the second year the crop is nearly pure timothy. The crops of hay are seldom cut more than four consecutive years, though if manured on the sod will last much longer. In case, however, the grass becomes poorly set, or the vacant spots filled with weeds or other intruders, it is much better at once to replow, though the sod be but of one or two years duration.

The time of cutting to make the best hay is a matter of importance. It should not be fully ripe. But, on the other hand, if cut altogether before seeding or flowering, the hay will be light, innutritious, and not relished by stock. Cut when the blossom begins to fall, or when about half off. The hay should, if possible, be not allowed to get wet by rain after it has been once dry. If to go in a close barn, it may be taken in after a few hours exposure to sunshine.

In packing, it is found that large bales (those made by hand presses) sell better than small bales.

In conclusion, if there be any general cause for the reputation of Cecil county hay being at a premium, it is probably because it has been cut at the right time and properly cured; because rigid honesty has generally been observed in packing the bales, and especially because the use of bone as a manure is universal with those who here produce hay for market. Such hay is perhaps 20 per cent. more nutritious than hay of the same sort grown on land deficient in bone manure.

L. BALDERSTON, } *Committee on*
ADAM R. MAGRAW, } *Report.*

---

RISING SUN, CECIL CO., MD., *April* 9, 1877.

MR. A. R. MAGRAW:

*Dear Sir*—Your favor of the 6th came on the 7th, but too late for me to reply until to-day, and I assure you that I am always very happy to give any light that I have to my brother farmers, and more particularly Virginians, and I will endeavor to answer your questions to the best of my ability—depending on you to put them in proper form.

*Question* 1.—What character of land is best adapted for timothy?

*Answer.*—Clayish land, made rich, and not too rolling.

*Question* 2.—How is it prepared for seeding?

*Answer.*—Plow deep as the soil will permit, and sow 600 lbs. of bone-dust per acre; then pulverize thoroughly; then seed with wheat.

*Question* 3.—How much seed per acre is necessary to insure a good crop?

*Answer.*—Six quarts of seed for pure timothy hay, or five quarts of timothy and five quarts of clover for mixed hay. Clover sowed in the spring.

*Question* 4.—How long will the sod last without reseeding?

*Answer.*—My experience is, four years.

*Question* 5.—When should the hay be cut, and how cured, stacked, &c.?

*Answer.*—Pure timothy should be cut as early as the blossom begins to fall, so that in turning or making the hay it will drop off,—thereby relieving the hay of a great deal of *dust.*

It *should not* be cut too early in the morning; not until the *dew* is off, and never when wet. It should be raked in rows or bunched to stand over night, for if left as cut the dew will *blacken* or give it a *yellowish cast.*

Mixed hay should be cut sooner—say when two-thirds of the clover blossoms are a little brown. Hay should never be stacked unless the top of stack is covered with boards. The best of stacks left six months will lose one-fifth.

*Question* 6.—What fertilizers are used for top-dressing?

*Answer.*—Pure fine bone-dust, 300 or 400 lbs. per acre. Sow early in April, the spring after cutting two crops of hay.

*Question* 7.—What mower and hay press have been found the best?

*Answer.*—I consider the "Champion combined" the most useful on a farm; and the "Union" the best single mower. The single mowers are all almost perfect; very little difference in their cutting qualities. Wakeman's patent is the best hand hay-press. They *all* should have *two driving wheels.*

*Question* 8.—What is considered a fair average yield per acre?

*Answer.*—One and one-half tons per acre is a fair average yield; but we often have two tons, and sometimes more.

*Question* 9.—What is the best time for seeding land for a permanent crop?

*Answer.*—The last week in August or first week in September. *If sowed earlier will injure the wheat.*

*Question* 10.—Is it best to sow timothy alone or with a grain crop?

*Answer.*—It is best to drill it in with wheat, or if you sow broadcast after the wheat it should be harrowed in with a light smoothing harrow.

*Question* 11.—If there is but a partial set, will it answer to sow fresh seed and harrow it in without plowing the land again?

*Answer.*—No. Far better to plow again and put in wheat and sow your timothy seed. You will notice that I always say wheat, for I have tried timothy seed with rye with but partial success; also with oats with no better results.

I have noticed where I drilled my timothy seed in with the wheat that it did not run out as soon as where I sowed it broadcast on top without harrowing; therefore have come to the conclusion that that is the proper way to do, &c.

Very respectfully yours, &c.,

WM. JAS. EVANS.

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ROWLANDSVILLE, *May* 19, 1877.

MR. ADAM R. MAGRAW:

*Dear Sir*—My experience is as follows:

1. Low or north-laying land is considered the best for timothy, as very high land or south hill sides are too dry and hot; a black loamy soil is considered the best; red or white clay soils are very good, while gravelly or sandy land will not produce an average crop.

2. Ground should be ploughed about six weeks before seeding, and harrowed about once a week and just before seeding. When there is no grain to be sown with the timothy it should be ploughed the second time and well harrowed until it becomes level and very soft, and then it should be laid out in twelve-feet lands, as it is impossible to get the seed regular when it is wider. After the seed has been sown it should have a light stroke with the harrow, without being rolled; the roller leaves a light crust or scale on the top, which makes the timothy come up very irregular. If grain should be sown, it is no advantage in ploughing the ground twice.

3. Without grain, about one gallon and a half to one gallon and three quarts. With grain, a less quantity is sufficient.

4. A good set on rich ground will be profitable from four to six years; poor ground will not last so long.

5. It should be cut when the blossom is about one-half off of the bigger stalks, and when the smaller ones are in full bloom.

6. Pure ground bone or any short stable manure is considered the best, and should be sown and harrowed in with the seed, or any kind of fertilizer which will act quick.

7. Any mower that cuts the stubble high and clean will suit, but timothy that is cut very low the August sun will kill the roots and destroy the sod. The horse-power press is considered the best,—it cleans the dust out of it and gives it a brighter color.

8. Two tons is an average crop, but three tons per acre can be raised.

9. In any part of the country timothy should be sown by itself from four to six weeks sooner than wheat; or, to sow it with other crops, it is plenty early enough when the other grain is sown.

10. It is no advantage to be sown with another crop, as it will set by itself as well.

11. If the grass is thin it will of itself work in thicker; but if it is much missed I would advise setting it over, as to sow seed and harrowing it in without plowing would give you two crops that would not ripen at once, and would injure the price very much.

AMENDMENT TO QUESTION 5.

When it is early in the season it ought to be well cured before it is stored in barns or stacked; at the close of harvest we have often cut in the morning and put it in the barn the same evening.

This is a correct statement as far as I am capable of answering your questions; and if at any time you would want to know anything as regards farming, I would be pleased to give you my advice as to the way and manner that father carried it on. Most respectfully,

WM. R. COOLEY.

---

RISING SUN, *April* 19, 1877.

MR. A. R. MAGRAW:

*Dear Sir*—I received your favor of the 19th, and will answer your several questions briefly:

The soil best adapted to timothy is that in which clay predominates; if not dry, make it so by underdrainage.

The land is prepared by a thorough plowing, rolling and harrowing.

Six quarts of seed, under favorable circumstances, will make a good sod; if not favorable, use more.

I generally reseed every five years.

Timothy should be cut when in full bloom; let it lay until wilted on top; shake it up with a hay-tedder; let it remain so until sufficiently dry, then stow it away in barns. Stacking is too wasteful unless thatched, and that takes up too much time in the busy season.

For a top-dressing I would use pure dissolved bone. Mowers have been brought so near perfection that it is a matter of opinion which is best. The principal points to seek for are durability and lightness of draught.

The chain press, Wakeman's patent, is the one most used in this neighborhood,—probably because it is manufactured here. But where there is a large amount to bale, a steam or horse-power press would be preferable. Two tons of hay per acre for a neighborhood, I would consider a fair average yield. Highly-improved farms will yield three to three and a-half. A permanent sod will not produce a prime article of hay; natural grass will spring up and decrease its market value. It is best to sow timothy with a farm crop. Plow your sod for corn; give it a good top-dressing of bone; roll and harrow until the soil is fine; keep your corn well cultivated, so as to kill all kinds of grass and weeds.

Plow your corn stubble in June. As soon as your harvest is finished, haul out and spread your manure; plow it under, and give a good top-dressing of bone broadcast; roll and harrow until your soil is fine; drill in your wheat, having a timothy-seed sower attached to your drill; if done well and under favorable circumstances, you need not fear the result. If there is but a partial set, better plow up and reseed.

Respectfully, JNO. HAMERSMITH.

---

STEPNEY FARM, *April 16th*, 1877.

ADAM R. MAGRAW, ESQ.

Yours of the 6th inst., received, and I shall endeavor to answer the several questions in their order. The subject is a very comprehensive one, and if fully and carefully discussed, or even answered, would require much time and greater experience than I think I possess. I have re-enclosed your letter, so that you may have the questions, and will now proceed to answer them the best I can: 1st. Heavy flat clay land. 2d. Plow in August, sow in September together with the wheat—better drilled than sowed. 3d. Five quarts per acre. 4th. Four years. 5th. When one-half the white blossom is out it should then be cut. Never cut it when wet. Rake it in rows before the dew falls, and pile it the day it is cut; and next morning when dew goes off open it out. Same day stack or put it in barn. 6th. Bones for timothy forever. 7th. Depends upon different tastes. 8th. Two tons per acre. 9th. Answered by second. 10th. With grain crop, beside is cheapest. 11th. Don't think it will—tried it—didn't injure the other grass, but fresh seed didn't grow.

Respectfully, JOHN P. EVANS.

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ROCKSPRINGS, *4th mo. 14th*, 1877.

FRIEND ADAM R. MAGRAW:

I received thy request as to raising timothy hay, but do not know whether it would be safe to rely on my experience on the subject.

I will endeavor to give some of my experience on my kind of land:

1. I think lowish land with a little clay is best for timothy.

2. Raw bone is the best fertilizer.

3. To sow timothy with wheat on corn ground, sow 1,000 or 1,500 lbs. of bones on a sod in the spring, as soon as the frost is out, and plow in about four inches deep; the 1st of 5th month (May) plant corn; the next 6th month (June) a year cultivate the ground with a harrow right well, and drill 1 bushel of Hungarian grass seed, and cut that when fit for hay. Plow the ground deep enough to turn the bone up, and drill in about the 20th of 9th month (September) with the wheat about 8 quarts of timothy seed to the acre. I prefer new seed, but I have sown seed a year old that did very well. If the ground is as damp as the drill will work well, the timothy is more likely to take, and the wheat also.

4. I think barn-yard manure is the best to top-dress with; put on about the 1st of 5th month (May.) The grass grows up rapidly and covers from the sun before the hot weather comes on.

5. Cut the timothy about the time the last blossom is off. Thy friend,

WILLIAM J. PRESTON.

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## Something More About Manures—Chemical and Domestic—No. 2.

*Messrs. Editors American Farmer:*

Before commencing my second number, I beg leave to file a bill of exceptions (as the lawyers have it) to quite a number of typographical errors which I notice in my first. In the first error noted you have it re-union instead of *union;* 2d, augmentary instead of *augmentative;* 3d, Sachara or corn sugar instead of *Saccharose or cane sugar;* 4th, fructor instead of *fructose or fruit sugar;* and 5th, involving serious more or less loss, instead of *involving serious loss—more or less.*

### THE DIFFERENT CONSTITUENTS OF PLANTS AND FERTILIZERS.

The price of all fertilizers should be regulated and determined by their per centage of certain leading ingredients,—usually of potash, ammonia or nitrogen, phosphoric acid and magnesia; the most valuable and important of which is ammonia. And in order that the farmer may act

knowingly, he should understand the value, importance and properties of these several fundamental elements so called.

Liebig, treating of this subject of concentration, says: "Time will come when plants growing upon fields will be supplied with appropriate manure, prepared in chemical manufactories, and when the plant will receive only such substances as actually serve it for food,—just as a few grains of quinine are now given to the patient, instead of the ounce of wood he was formerly compelled to take."

Different plants require different fertilizers, and different soils the same. The main agricultural plants are divided into three classes, viz: lime plants, potash plants and silica plants. Not that these different classes of plants are constructed mainly of the elements from which they derive their names, but that these are the preponderating elements in their composition.

The lime plants are peas, clover and tobacco. The potash plants are beets, potatoes, corn and turnips; and the silica plants are wheat, oats, rye and barley. Of all the plants cultivated here, tobacco draws most heavily upon the mineral elements of the soil. Tobacco yields on average about 20 per cent. of ash ingredients. It also requires a very large amount of nitrogen. This shows how gross a feeder tobacco is, and how exhaustive it must be to the soil. Every practical tobacco-grower knows that tobacco requires the very richest soil, or one that is highly manured. Fortunately tobacco does not take all of its nitrogen from the soil. It has been recently discovered that the tobacco plant, by reason of its broad leaf, is enabled to assimilate, to some extent, the free nitrogen of the atmosphere, as do the leguminous plants. But the tobacco crop, although thus necessarily exhaustive in its tendency, by heavy manuring and thorough cultivation may be made highly remunerative. Besides, it leaves the soil in the very best physical condition for wheat, which should always follow it, whilst there is left over in the debris of the plant—the stalks, roots and prunings—a large amount of nitrogen for the wheat crop.

Wheat is much less exhaustive than tobacco. Including the straw it yields only 4 per cent. of ash, being just one-fourth of what tobacco yields. The ash of wheat contains 4 per cent. of lime, 26 per cent. of phosphoric acid, 20 per cent. of potash and 40 per cent. of silica. At this rate a crop of 20 bushels would take from the soil about 100 pounds of the mineral elements, whilst 1,000 pounds of tobacco would take 200 pounds.

In view of the fact that tobacco requires so much lime, it would be highly advisable to make moderate applications of lime to our tobacco lots occasionally,—say from 15 to 20 bushels per acre; more especially where standing lots are kept. Such an application would not merely prevent exhaustion of lime in the soil, but where these lots have had the benefit of heavy applications of coarse farm-pen manures, it would produce a more rapid decomposition both of manure and the mineral elements of the soil.

Lime and ammonia have a very strong antagonism to each other, and when they come together they form the carbonate of ammonia, which being very volatile escapes rapidly into the atmosphere.

CARBONATE OF AMMONIA VS. PLASTER.

The carbonate of ammonia in the solid state is a white chrystalized body, which, on being exposed to atmospheric vapor, evaporates like camphor, without assuming the intermediate liquid state.

In the act of decomposition all *animal* bodies yield carbonate of ammonia, as do most vegetable substances when fully exposed to the atmosphere, and whilst undergoing rapid decomposition.

It is well known to every intelligent practical farmer that plaster, the sulphate of lime, when sprinkled over manure heaps, has the effect of stopping the escape of the carbonate of ammonia, and it is effected in this way: Plaster is a salt, formed by the chemical union of lime and sulphur, and hence the technical name of the sulphate of lime. Now, when plaster is sprinkled over the manure heap, its sulphur unites with the carbonate of ammonia that has been formed from the manure, and forms the *sulphate* of ammonia, which is a fixed salt that does not evaporate like the carbonate. The sulphate of ammonia is now very extensively employed in the manufacture of fertilizers. It contains about 20 per cent. of nitrogen, and is readily soluble in water.

Farmers sometimes use plaster to decompose vegetable substances. This is an error. Plaster does not act as a decomposer, but the very reverse. It acts as a preservative. Lime and ashes are decomposing bodies.

Under certain favorable conditions of sod and seasons, plaster acts very favorably upon vegetation. Upon clover its effect is sometimes marvellous. This favorable action of plaster has never been satisfactorily explained; but many ingenious theories have been advanced to account for it. Prof. Johnson, of Yale, thinks that it is done by facilitating the formation of the nitrates in the soil, whilst Liebig attributes it to its power in fixing the ammonia of the soil by converting the carbonate into the *sulphate* of ammonia. Plaster is soluble in cold water; but according to the highest authorities, it takes from 500 to 1,000 parts of water to dissolve one of plaster. Its failure to act in many cases may be due to the want of a sufficient amount of water to dissolve it. During very dry spells, for instance, it could not possibly get water enough to dissolve it. And this reminds me of a practice prevailing amongst tobacco-growers, of applying plaster to their tobacco during droughts, by dropping a little on the plant in order to attract moisture from the vapor of the atmosphere. I cannot see how such an application can have the least effect. For in the first place, plaster does not absorb the vapor of the atmosphere to any extent; and in the second place, the plant does not do it, even if the plaster does.

Professor Johnson, in his admirable work, "How Crops Feed," gives a table of experiments, showing the capacity of thirteen different soils and substances for absorbing the vapor of water. This table shows that whilst humus is capable of absorbing 120-thousandths of the vapor of water during 24 hours, plaster only absorbed 1 during the same time.

### COMMON SALT AS A MANURE.

Common salt is sometimes used as manure, but it is exceedingly doubtful whether it has any value as such, or any fertilizing properties whatever; but it is probable that it does exert some chemical effect in certain cases. It is clear that salt is not a necessary plant food. It may be found in the ash of some agricultural plants, but it is by no means necessary for their full growth and development. Salt is compounded of chlorine and sodium,—and hence its technical name, chloride of sodium. The two elements, chlorine and sodium, are found in the ash of all plants, but in very small quantities. What the plant needs of these is abundantly supplied in the soil.

The favorable action of salt upon vegetation (if indeed it has any) is due, according to Liebig, to its power to enable the plant to assimilate the sulphur of the sulphate of lime when that is applied.

The effect of salt in preserving meat is due to the fact that salt has a very strong attraction for water. It has the power of extracting water from all substances to which it is applied.

When salt is applied to meat it extracts the water from it and leaves it so dry that decomposition is prevented. For instance, when pork is salted and placed in a vessel, in a short time a considerable amount of water will be found in the bottom of it. All of this water has been extracted from the pork by the action of the salt. When salt is taken into the stomach it has the same effect. It absorbs the juices of the stomach, and when taken in much quantity produces the most intense thirst. From these facts, which are obtained from the highest authorities, it would seem that salt is worth very little as a manure, and yet it has been used very extensively for that purpose.

### DIFFERENT CROPS REQUIRE DIFFERENT MANURES.

As before observed, the different crops require different kinds of fertilizers. There are the lime, potash and silica plants—all differently constituted and requiring different treatment. Wheat, oats, rye and barley, the silica plants, require an ammoniated fertilizer combined with potash and phosphoric acid. Turnips, beets, potatoes and corn, the potash plants, require a super-phosphate combined with potash.

Clover, beans and peas, require lime combined with potash; and tobacco, which is classed with the lime plants, requires lime, potash and magnesia, combined with ammonia. When an ammoniated fertilizer is applied to turnips, its ammonia, which is its most costly ingredient, is in a great measure lost. The turnip does not need ammonia, and so with clover and peas. These get their nitrogen from the atmosphere, and there is no necessity of supplying it to them artificially.

A few thoughts touching domestic manures, and the great importance of saving them:

On every farm there is to be found more or less of crude material, out of which a great deal of valuable manure can be made by composting and otherwise, and which is generally wasted. Since the very general introduction of chemical manures, our farmers have become very negligent in saving their domestic manures. This is a fatal error; for although it involves the loss of a good deal of time and labor, yet their domestic manures are exceedingly valuable and indispensable to successful farming.

Domestic manures are complete fertilizers. They furnish all the constituents of plant food, both organic and inorganic, whilst the fertilizers do not. These scarcely ever supply more than four or five of the fourteen elements needed for the full development of the plant. It is true that generally only from two to five need be supplied, the balance being furnished abundantly by the soil and the atmosphere. But it sometimes happens that the soil becomes exhausted of some of the inferior elements, and, in consequence, becomes unproductive. When this happens, the farmer, in the absence of an analytical chemist, has no means of ascertaining the deficient element. But when the domestic manures are freely used, he can not fail to supply the deficient element, because they furnish them all. Besides, it is best generally to combine the two, for both of them act better when so combined.

### PRESERVING DOMESTIC MANURES.

Allow me here, in a special manner, to call the attention of our farmers to the importance of adopting some better means for preserving the liquid excrements of domestic animals. The urine of all animals is more or less rich in nitrogen. That of the horse contains 15 per cent. of ammonia, while the solids contain only 4,—consequently the liquids are worth four times as much as the solids. The urine of the cow contains 6 per cent. of ammonia, the solids 2. The eminent French chemist, Boussingault, estimates that the cow will void 13,000 pounds of urine during the year, worth $34. Of course the urine of the horse is worth much more. It is estimated that, ordinarily, farmers suffer three-fourths of this most valuable material to go to waste, for the want of the necessary care in preserving it,—and it may be added that for the same reason one-half of the solids find the same destination. Farmers should turn their attention to this important work, and adopt such means as will enable them to save both the liquid and the solid excrements, for it bespeaks very little in favor of their sagacity, when they spend so much money for chemical manures, whilst allowing more than one half of their domestic manures to thus go to waste.

What is the best and most effective means of preserving these domestic manures, is a question of the utmost practical importance. The best class farmers in Europe have their stables so constructed as to save the liquids separate from the solids, and the former are applied to the crops in the liquid state. But this plan is not practicable with the great mass of our farmers. The cheapest practical plan here is to use certain crude materials, such as straw, leaves, stalks, &c., as absorbents for the liquid manures.

This plan is very effective to some extent, but as usually practiced it falls very short of doing the work effectually,—for this material does not absorb all the liquids, more especially for some time after the stable has been cleaned out. They are not entirely effective until there has been a large accumulation of this material in the stable.

Woods-mold, rich dirt and chip manure, furnish the best material for this purpose. And it would be advisable, immediately after the stalls have been cleaned out, to have them filled to the depth of from 10 to 12 inches with material of this kind, and covering this over with leaves or straw as bedding for the horses. In the construction of their stables, some of our best Virginia farmers keep separate rooms or stalls for their work horses. These contain no stalls, but the horses are all kept promiscuously together in the same room. After they have become accustomed to each other they will not fight. Horses that are kept in this way will learn to behave very discreetly towards each other. Each one will select his own place of feeding, and he will scarcely ever trespass upon the rights of his neighbor. There are two very decided advantages in this plan. First, the horse will be able to select his bed, and thus make himself more comfortable. Second, the excrements will be uniformly distributed over the floor of the stable, and not all dropped in the same place, as when the horses are confined to narrow stalls. When stalls are provided they should be wide and roomy, so that the horse can turn around and change his position at pleasure. When the stalls are narrow and the horse is haltered therein, the excrements are all dropped in the same place, and, in consequence, much of the liquid excrements are leaked out.

Domestic manures lose a great deal by the escape of the ammonia in the atmosphere, as well as by leaching and drainage when they are thrown out-doors, as is done by many of our farmers. The escape of the ammonia may be prevented by sprinkling a little plaster over the heap occasionally. But the best plan is to keep these domestic manures of every kind under cover. Even the farrow pens should be sheltered, and the necessary absorbents supplied to take up the liquids.

Another very important object would be secured by having warm and comfortable shelters for our cattle. They would be kept in much better condition with less feeding. In all animals there is stored up in the system a certain substance for the sole purpose of keeping up the animal heat. This is the fat, which is a combustible material, and, in order to keep up the necessary animal heat, undergoes the same kind of combustion that our fuel does to keep up heat in our domicils, though in a more modified form. When the animal is kept warm and comfortable it takes only a small quantity of fat to keep up the animal heat, and any excess remains stored up in the system, and there is a constant accumulation so long as the animal is kept warm and sufficiently supplied with food. But when the animal is exposed to the weather and kept shivering with excessive cold, all the fat that is secreted in the system is consumed in keeping up the animal heat, and the animal does not fatten. For this very obvious reason, all animals put up to be fattened should be kept warm and comfortable.

There are many other crude materials and other modes of saving and utilizing them in adding to our stock of domestic manures. There are the dead animals, the bones, ashes, hen house manure, the soap-suds, sweepings, &c., &c.; indeed every thing that can be converted into manure should be utilized to that end. If the practical farmer will put his wits to work he will find many other things, and he will invent other devices by which he may greatly increase his stock of manure.

Having thus accumulated every pound of domestic manure possible, they should be all applied to the land to be cultivated as far as they will go, and then followed up with liberal applications of some good fertilizer, and this followed up by deep and thorough cultivation applied at the proper time. In a word, manure heavily, cultivate thoroughly, and make large yields.

This is the way "to make the farm pay," and more especially so in the cultivation of tobacco.

One other word about the improvement of our lands and a

### ROTATION OF CROPS.

The persistent habit that we have fallen into of cultivating large areas of poor land that often do not pay one-half the cost of cultivation is the main cause of our poverty. This habit should be stopped, and our poor lands improved, else inevitable bankruptcy awaits us. This is to be done in two ways: first, by manuring, and second by a rotation of crops. Both of these should be put in operation, and perseveringly followed up. Every pound of manure should be saved and applied to the soil, and a good rotation at once adopted.

In the adoption of a rotation system, science comes to our aid and clearly lays down the proper data to govern us. Our main agricultural plants are divided into three classes: lime, potash and silica plants. These different classes take from the soil different elements, and different quantities of the same elements. For instance, tobacco extracts from the soil large quantities of lime, while beets and turnips take very little. Both wheat and tobacco require lime, but in unequal quantities; wheat only 6 per cent., whilst tobacco takes up 43 per cent. of its ash ingredients. Tobacco, which is a lime plant, and corn, which is a potash plant, both take up potash, but in unequal quantities: tobacco only 25 per cent., whilst the ash of the corn-stalks contains 71 per cent. Now the principle to be carried out in a rotation system is to have such a succession of these different classes of plants, as to rest the soil as it were and save it from too great a drain upon any one element, and thus prevent exhaustion.

Thus, to commence with a potash plant, say turnips, beets, potatoes or corn. This should be followed by a silica plant, say wheat, oats, barley or rye, and this to be succeeded by a lime plant, viz: clover, peas, or lucerne, or tobacco. A soil may be so constituted as to produce a very good yield of one crop, and a very poor one of another, by reason of its deficiency in some one element needed for one of them. A soil deficient in lime, but abounding in potash and phosphoric acid, will produce a good crop of turnips or potatoes, but a poor one of tobacco. A heavy clay soil is well adapted to wheat, but unsuited for tobacco; whilst a light gray is best suited for tobacco, but unfit for wheat. The soil is a very complex affair—requiring much experience, observation and study to understand it thoroughly.

*Cumberland Co., Va.* WM. HOLMAN.

## Formula for Super-Phosphate ample for One Acre.

*Messrs. Editors American Farmer:*

I send you the following formula for a mixture, which I have found to act finely where phosphoric acid is needed in the soil:

Muriatic Acid, 20° Beaume ..... ..... 150 lbs.
Old bones, such as hor-e-heads, shin-bones, &c.. 100 lbs.

Mix the acid with about half as much water in a tight cask (coal-oil barrel will do) and add the bones, which, in a few hours, will be dissolved. The mixture consists of muriate of lime and super-phosphate of lime, (mono-phosphate,) both being soluble. Have the proper quantity of dry earth and sand as an absorbent; mix thoroughly with the above solution, and then add one-half to one bushel of air-slaked lime, which will precipitate on every grain of the sand that has been moistened a small portion of the phosphoric acid in the form of a tribasic phosphate, or bone, divided in the finest possible form,—a thousand times finer than any sieve will make it,—which, in this condition, having such a large surface exposed, will be readily dissolved by the rain and carbonic acid, and carried to the roots of the plant in suitable form to be taken up and properly appropriated in the same.

It will be observed that this is an alkaline phosphate entirely different from what is known as commercial phosphate—that being an acid phosphate, which must be converted after reaching the soil.

This quantity will furnish abundance of the phosphate for a crop of wheat and several crops of grass, provided the land needs nothing else. To this mixture salt and plaster would no doubt be of great advantage to some lands, and I would advise their use for experimental purposes, as a dressing for grass lands after cutting wheat; fine ground bone could be substituted for a portion of the dry earth, and the hundred pounds of bone could be spread on four or five acres of land, and by the time the finely dissolved bone was taken up the other would be coming in play. Another advantage of the formula is that all the old bones of the neighborhood could be utilized instead of sending them to the city to be manipulated, and returned to the farmer with an enormous profit tacked on them in the shape of *water*, worthless organic matter, coal ashes, &c.

There can be no certain quantity of bone and acid given to make a perfectly neutral solution, as the nature of the bone varies very much. For instance, very old dry bones that have been long exposed lose their organic matter, such as oil, gelatine, &c., and in such a condition would require more acid for a solution. The undissolved bone could be used in making a second or third lot in case the above-mentioned quantity should fail to dissolve all the bone, which it surely would with old dry bones. I have given more than enough, so there should be no loss of acid.

Sulphuric acid can be used instead of the muriatic, but the compound being super-phosphate of lime and sulphate of lime, the latter being insoluble, prevents in a measure the proper distribution of the important ingredient through the earth, &c.; yet it can be used to great advantage and with more economy, as it is stronger, pound per pound.

To illustrate more fully to those not familiar with chemical terms, I will suppose a case: A person desires to cover an acre with say one pound of salt, so that every square inch will have some on it; to do so, dissolve the salt in sufficient water, and moistening a proper quantity of dry earth and sand and sowing the same, a minute particle of salt will reach every square inch. The same result will be obtained by using the solution of bone. Thirty pounds of bone properly spread will furnish enough for a crop of wheat or corn. Mr. Simon several years ago purchased a *poor farm* in Prince George's Co., in this State, and I gave him the above mode of making his fertilizer, and he informs me it has acted finely, and on a farm where grass and milk were almost unknown, he has been for several years sending 18 to 20 pounds of butter to the city weekly for sale after supplying the family. This tells the tale about his fine timothy and clover he is so proud of. As a dryer he uses all the good hickory ashes he can get, the potash taking the place of the lime in precipitating the fine bone phosphate. Again I ask where is the ammonia, where is the *thirty per cent.* organic matter, capable of producing 3 per cent. of ammonia and costing near one-third the price of the usual phosphates sold. The tankage of the western slaughter-houses, the shoe factories of Massachusetts, and the soap-boilers of the cities are represented in that thirty per cent.

The cost of the above will be about as follows, for the acid and bone:

150 lbs. Muriatic Acid..... $3·00
100 lbs. Bone..... $1 50—4 50

If sulphuric acid 66° is used, about 75 pounds will equal the solvent power of 150 pounds of muriatic acid. In handling either, due caution will be necessary to keep them off the clothes or skin, and avoid inhaling the fumes.

*Baltimore, June*, 1877. A. P. SHARP.

## The True Theory of Farming—No. 16.

CULTIVATION OF GROWING CROPS.

*Messrs. Editors American Farmer:*

After the traditionary *unobservant* experience of several thousand years' tillage and warfare against weeds, not one farmer in a thousand can tell why and how weeds are injurious and cultivation beneficial.

Fertile soil, with abundant rainfalls, has, in times passed, responded to the blindest labor, making knowledge, unattained, unnecessary.

But the introduction of improved implements, and modes of doing the work, has created a new competition. The struggle is not now so much to find the best market, and to obtain the highest price, as to find the best known means of *reducing the cost of production*, so as to leave a margin of profit between that and the prices in the commercial marts, and to perpetuate fertility.

In this view we will examine the subject of cultivation, passing for the present the *preparation* for planting, because there is less diversity of opinion on that subject, and because the masses are in such a degree of error about cultivation, after planting, as involves the unneces-

sary, irretrievable annual loss of more *plant-producing* material than can be restored by all the factories in the world, and because the knowledge to avert the evil is already in the world.

Like everything else, the subject of cultivation is wrapped in mystery, till we understand the laws that govern the various material forces connected with it.

One object in cultivation, recognized by the most ignorant, is to suppress weeds.

The necessity and means of accomplishing this are so well known that it will be passed with one remark. Corn, potatoes, and the like, cannot, with any known implements, be produced for the present prices, and leave a profit, if the annual weeds are allowed to grow and *form roots and stems during the growth of the crops.*

The only economical mode is to expose and kill them, as soon as they germinate, before they are conspicuous on the surface.

The injury done the crops by stems and leaves of weeds depends on the influence of evaporation, sunshine, shade, &c., and cannot be understood without some knowledge of those influences.

At the beginning of farm life, in order to learn the most approved methods, I employed a first-class farmer and gardener, fresh from England.

He persisted in a mode of cultivation precisely the reverse of what I had been used to see,—allowing the mangels and other beets, the corn, potatoes, peas, beans, cucumbers, melons, tomatoes, cabbage, &c., to go without any hilling up. The mangels and sugar-beets stood high above the ground, the bulbous parts exposed to the sun,—many of the mangels falling over and growing crooked. The part of the cucumbers just above ground, which I insisted was rather a root than stem, and should be surrounded by earth, was left entirely exposed to the sun. I thought the sun would parch the "root" and it would break or be injured, when the stem should fall from the upright to the horizontal position.

The Englishman would have his way, but agreed I should treat some of each sort of plants in my own way. So a few of all sorts were hilled up, and fully as well worked, in other respects, as his, during the season.

For a few weeks mine grew as well as his, and the cucumbers, peas, &c., bloomed as early.—After one gathering of cucumbers, peas, &c., and the dry season set in, mine perished, while his continued to bloom and bear,—and so of the melons.

My potatoes made about half a crop of small tubers, dug from dry hills; his yielded bounteously of large ones, dug from moist earth, at the same time, in the same field. So with the mangels, sugar-beets, &c. The hilled or ridged peas, beans, &c., fired early in the action, and succumbed to the drought.

Without this experience, if one had said that hilling up growing plants would kill them, I should have joined in the response of a million farmers, denouncing it as false and contrary to experience, because they did not perish on *the day they were hilled up.*

Ever since I have avoided hilling and ridging about growing plants, and cultivated the soil as levelly as possible.

Thus having learned that level is better than hilled, ridged or furrowed cultivation, I sought for the *reasons*, because the reason of one thing often leads to the knowledge of a thousand others.

In this and the ensuing paper I hope to give your intelligent truth-seeking patrons the result of my reflections and examination of the subject.

If the true theory recognizes and rests on the lights of observant experience, and points to level cultivation as the true mode against furrowed cultivation, we are told by a certain class that our fathers produced better crops than our boasted theory, and cultivated with shovel plows, in furrows and ridges.

And so they raised wheat without *applying* lime or other fertilizers, and potatoes without Paris green, and looked on grasshoppers as harmless creatures. The same assumptions apply with equal force against artificial irrigation, and every resort of science in the battle against evils entailed by calamitous ignorance.

Thus we find traditionary assumptions of ignorant bigots, embellished by the appellation of "experience," arrayed against enlightened attentive observation.

The boasted so-called experience of a thousand years, teaches millions of its votaries, that mounds or ridges about plants does not kill, nor hurt them, nor injure the soil.

Observant experience, as embodied in true theory, whether of a year or a century, teaches that, compared with *level* cultivation, *furrowed, ridged, or hilled cultivation of growing crops* injures all, and causes the premature death of many plants, and sweeps away the soil.

Here is the clashing of irrational against rational experience. The assumptions of the former rest on a comparison between furrowed, hilled or ridged cultivation, and no cultivation at all. The logic is, that being better than none, it is also better than any that can be devised. Rational experience ignores what was never practiced, and never produced plants, and examines simply the comparative merits of the only modes in actual practice.

A soil with too much water is cold, dormant, and sterile. Drainage carries off the *superabundant* water, and that only. *It* never deprives the plants of what they need. The soil will hold enough by adhesive or capillary attraction, against all the forces exercised by drainage. But there is a force, far more potent for good or evil, called

EVAPORATION,

which overcomes the feeble adhesive attraction of the soil, often so nearly divesting the soil of water as to famish the plants.

It is one of the most influential and all-pervading forces of nature. It forms the clouds, supplies the springs, and creates the rivers; it irrigates the soil and plants to-day and parches them to-morrow; it sends the glorious raindrops and the terrific lightning, the bounteous harvest and the pestilential famine. Without its beneficent influence the plants and animals, necessary to our existence, and the human race, would speedily perish.

If the existence of the human family depends on the influence of this gigantic process, and it may, in some degree, be controlled,—securing its

benefits and averting its evils,—can we conceive a subject more imperatively demanding profoundest study? Is any labor too great which is necessary to its comprehension and reduction to control or direction? Yet how much has the boasted "experience" of a thousand years taught our so-called practical farmers about it? Does one in a million know the truth or falsity of what is here predicated of it?

But how can any special mode of cultivation promote its beneficial influences and obviate its calamitous results? And how shall we learn it? Simply by learning its cause, effects, consequences and results. Thus we have mastered the fierce lightning, and made it an obedient servant of transcendent powers and usefulness.

Electricity, like all other things, is governed by and subject to the same laws as at the creation. During the night of ignorance that prevailed many thousand years, our "practical" people "*experienced*" its phenomena, as exhibited in lightning, and during this long slumber of science, amid active "practical experience," it reigned an inscrutible monster,—ubiquitous, frightful, unapproachable.

It was left for another sort of experience to learn the means to enforce its obedience to man—to invest it with the rapidity of thought, and with intelligence itself, and speed it round the world, on errands of commerce, of war, and peace, and charity. So, with the light of what is already known, evaporation may be divested of its terrors, and its beneficent influences preserved.

Like all other things, it is preceded by causes, and followed by effects, consequences and results.

Its causes make it exist; its effects make other occurrences to begin. These primary *effects* become *causes*, in respect to the remoter *consequences*, and these, again, become intermediary causes in bringing about final *results*.

Rational observation traces occurrences, which must be the effect, consequence, or result, of some preceding cause, backwards, through these steps to the prime cause.

We may then begin at the original cause, and by analogy *foresee* other events, that may be produced by it, under variant circumstances within our control.

This is reason, intelligent observation, which only creatures of reason can experience.

It follows occurrences backwards,—as we trace a river from its mouth,—to immediate, remote and remotest causes.

Having thus learned the tributary influences, and examined the source, the return is joyously laden with its blessings, and safe from its evils.

If health and leisure permit, we will take a trip of this kind in the August issue of the old pioneer *American Farmer*, and together examine the cause, effects, consequences, and results of *evaporation*,—its blessings and its evils, with reference to the mode of cultivation best adapted to secure the one and avert the other.

Some have already joined with me, and encouraged my faltering steps through darker trials.

What new companions will join us now in a journey so all-pervading?

As there is "no excellence without labor," I appeal to those only who are willing to labor for truth. We must proceed on scientific principles: that is, simply, those laws that observation and experience have discovered, governing the vicissitudes of the journey. We will, however, pursue no technical scientific course. That has, for the most part, been traveled, and the path partially cleared by others. We will therefore select the easiest path; travel round the thorny hard words, that try the patience, and with the sustaining aid and encouragement of each other, press on to the goal that shall more firmly unite us in heart and hand.

As for the host of implacables who persist in arraying ignorance, in the garb of "practical experience," in opposition to truth and light, of which they are perversely ignorant, let those who labor for their reformation hold them to blazing public scorn, till their ill experience, ill manners, and vulgar flings, are turned to honest, earnest, laborious search for truth and knowledge.

Then, and not till then, *can* agriculture assume its place in the march of science.

*Shenandoah Co., Va.* L. H. McGINNIS.

## What Delays Prosperity?

*Messrs. Editors American Farmer:*

I enclose you money order for my subscription to *Farmer*.

We can never have a prosperous country until we have a prosperous agricultural interest. We can never have that with our present taxes, (general government, State and city,) and above all, the great and unlimited taxation of corporations, mainly in transportation of commodities. But in all things governments can do nothing for the people but oppress and rob them; and nineteen-twentieths of legislation (federal, State and municipal) is directed to that end. They are great suction pumps, which are daily exhausting the life-springs of our prosperity and filling the coffers of the rich with the sweat of the poor. The tax-payers must govern the tax-consumers. Is this possible now? I hope so, but fear. R. TOOMBS.

*Washington, Ga., June 14th, 1877.*

## Analyses of Fertilizers in Pennsylvania.

*Editors American Farmer:*

In accordance with a resolution of the Pennsylvania State Board of Agriculture, I herewith enclose tabulated result of a series of analyses made by the chemist of the board, Dr. F. A. Genth. The samples were selected by myself or reliable agent from the regular stock of the manufacturers; they were sent to the chemist by numbers, and the name only furnished when an analysis was returned. Every precaution was taken to make the test fair and just, and hence we think we may fairly claim that the results represent the brands at the time the samples were selected.

This valuation must not be accepted too literally, for it is impossible to fix a series of rates which will do equal and exact justice to all. The value of *insoluble* phosphoric acid depends upon the source from which it is derived; if from bone,

it is worth five or six cents per pound, but if from the more common source of South Carolina nodules it is comparatively valueless as manure.

Hence it is evident that the valuation of such brands as derive their *insoluble* phosphoric acid from bone, are too low, while those in which it is obtained from South Carolina rock are too high.

Respectfully, THOS. J. EDGE,
*Secretary Pennsylvania State Board Agriculture.*

The estimated commercial value is based upon the following rates:

| | | |
|---|---|---|
| Soluble and Precip. Phosphoric Acid | 10 | cts. lb. |
| Insoluble " " | 4 | " " |
| Potash | 7 | " " |
| Ammonia | 17½ | " " |
| Soluble Silica | 5 | " " |

| NAME. | Commercial Value..... | Ammonia..... | Potash..... | Insoluble Phos. Acid. | Sol. & Precip. Phos. Acid. | Moisture..... |
|---|---|---|---|---|---|---|
| | $60.35 | | | | | |
| "Challenge Phos.," Baugh & Sons, Phila. | 32.30 | 0.08 | 0.05 | 0.32 | 30.10 | 7.87 |
| Dissolved S. C. Rock, Baugh & Sons, Phila. | 30.79 | 0.23 | 0.11 | 5.14 | 13.62 | 4.00 |
| "Popplein's Silicated Phos.," Baltimore, Md.* | 38.16 | ..... | 2.06 | 2.10 | 5.74 | ..... |
| "Buffalo Honest Phos.," Buffalo, N. Y. | 37.08 | 0.76 | 0.13 | 2.22 | 11.52 | 10.93 |
| "High Grade Phos.," Farmer's Fert. Co., Phila. | 28.89 | 3.06 | 3.50 | 5.36 | 7.33 | 6.65 |
| "Ammoniated Bone Phos.," Passmore & Cope, Penna. | 32.57 | 2.03 | 2.03 | 1.85 | 8.68 | 4.30 |
| Moro Phillips Phos., Phila. | 32.16 | 1.46 | 0.61 | 1.85 | 8.94 | 4.25 |
| "Genuine Phos.," W. H. Jones, Phila. | 33.54 | 2.13 | 1.82 | 5.85 | 8.94 | 4.95 |
| "Ammoniated dissolved bone," Baugh & Sons, Phila. | 33.16 | 3.10 | 0.24 | 4.89 | 10.03 | 4.95 |
| "Peiruan Guano," J. J. Allen's Sons, Phila. | 33.98 | 3.80 | 0.09 | 3.39 | 12.68 | 4.53 |
| "Sun Guano," Walton, Wham & Co., Phila. | 30.76 | 1.39 | ..... | 0.47 | 10.15 | 3.38 |
| Lemig's dissolved S. C. Rock, Phila. | 30.46 | 2.03 | 1.40 | 3.81 | 14.84 | 4.85 |
| "Wham's Raw Bone Phos.," Walton, Wham & Co., Phila. | 24.73 | ..... | 0.18 | 3.07 | 5.32 | 1.50 |
| "High Grade Nitro Phos.," Farmer's Fert. Co., Phila. | 35.19 | ..... | ..... | 6.76 | 9.66 | 1.88 |
| Wham's Acid Phos., Walton, Wham & Co., Phila. | 29.76 | 2.72 | 2.27 | 3.86 | 9.70 | 5.85 |
| Improved Acid Phos., Farmer's Fert. Co., Phila. | 28.85 | 2.06 | 2.00 | 4.56 | 8.05 | 8.43 |
| | 27.38 | ..... | ..... | 2.26 | 13.48 | 4.88 |
| | | 0.45 | | 8.14 | 9.49 | 3.52 |

*Quartz Sand, 13.53. Soluble Silica, (Diatoms) 11.94.

## The Crops in Tennessee.

*Messrs. Editors American Farmer:*

We are about ready to enter upon our harvest campaign. Wheat promises a very fine yield where put in on clover land, well prepared. Oats, in consequence of drought in May, will be a partial failure; the recent rains have, however, somewhat revived them. Corn, though late, is now doing well, and bids fair to do better than promised at the outset. Our meadows look more promising, and the yield, though greatly diminished, will be better than expected a month ago.

The *American Farmer* is always a very welcome visitor. Yours, truly, JAS. ANDERSON.
*Sumner Co., Tenn., June 16th*, 1877.

## Our French Letter.

### THE EXHIBITION OF 1878.

*Messrs. Editors American Farmer:*

To cut short all the sinister rumors respecting the 1878 Exhibition, the President of the Republic has declared that it will not be postponed. Apart from the official section of agriculture, there is room for the general body of French agriculturists to display more practical assistance towards the authorities. The weakest section of the 1867 exhibitors was the agricultural department; it was shuffled into an exceptionally out of the way place. The International Breeding Stock Show is fixed for the 5th to the 18th June, 1878, for cattle, sheep, pigs and poultry; and for horses from the 1st to 10th September following. Foreign exhibitors, dwelling at a distance, would do well to rely on farming implements and machinery in a business point of view. Except in the way of horses for army wants and general purposes, the minds of French farmers are made up respecting the live stock suited to their climates and holdings.

### CATTLE DISEASES.

France continues to be exempt from the cattle plague, and is so far convinced that it is in general on the decline that some foreign stock is being admitted. A vigilant frontier police and a competent veterinary surveillance in the interior of the country are deemed the best of sanitary precautions. But if the country has escaped the plague, the foot and mouth disease appears to be chronic, and perhaps, on the whole, the losses under this head equal those in other realms from the plague. The Marquis de Poncius complains that he left 300 head of fattening stock one evening perfectly well; the next morning he received a telegram that some of the animals had refused their feed; next evening all were on the sick list; he separated the most affected, bled all more or less, and in a short time the disease completely disappeared. He attributes the contagion to some bullocks he had purchased to send into the plains to be fattened, and which only passed at the extremity of the farm-yard to be weighed on the machine.

### THE USE OF LIME IN BELGIUM.

It is not an uncommon practice in Belgium to apply quick lime, not only to heavy but to light soils. How is a common amelioration produced under such dissimilar conditions? It is alleged that in the case of sandy soils not rich in humus the lime fixes the soluble principles of the manure and prevents their too rapid disappearance. In rich clay soils the lime hastens the solubility of organic matters. A vegetable compost is considered the best manner to apply lime to light soils. AM .Deherain broaches a theory on the action of gypsum on soils. The salts of potash and ammonia are, in the case of clay lands, retained near the surface. How are salts so soluble thus retained? Some are of opinion the cause is to be sought in their organic combinations; others in the clayey particles mechanically holding them. M. Deherain, following the laws of Bertholet, sustains that the gypsum displaces the alkalies, by forming soluble sulphates, which the argillaceous particles, being unable to

arrest, sink downwards; hence, why the tap roots of clover find benefit from gypsum, as it drags down soluble combinations to the subsoil; and on the contrary, why, for cereals, alkalies act most efficaciously on the surface.

DIFFERENT PROCESSES OF BUTTER-MAKING.

Denmark and Sweden, along with France, are the countries which supply England, Brazil and the East with butter. The preparation of butter in the first two countries is altogether the opposite of what takes place in France; yet the products of France appear, from market notes, to realize the higher prices. In Denmark and Sweden the butter is prepared from cream, skimmed from milk cooled in ice the moment after the cows are milked; it is churned at a similar low temperature, well-worked to expel the milk; never washed, and salted at the rate of 4 to 6 per cent. The French admit this plan enables the butter to resist rancidity and a hot climate, but at the loss of its consistency, flavor and aroma. It is the opinion of excellent judges, that by adopting the Swartz process of butter-making, viz: cooling the milk by means of ice or well-water, and churning the cream before it becomes at all acid, also at a low temperature, then washing the butter with water, salting it once and for good, working it slightly and rapidly, the most perfect butter for exportation could be obtained. In France, butter is ever sent unsalted to the market, and hence its aroma and flavor can be fully tested; the wholesale buyers then salt and barrel it up immediately for exportation to Brazil, the most important market after England. In the case of the extreme East, Denmark, however, beats France in the market; but France is the first in the preparation of fresh butter. It is admitted that when a dairy is suitably fitted up, it is advantageous to place the milk, immediately on being drawn from the cow, in pans cooled by ice or well-water; this secures a better throwing up of the cream, and a more profitable yield of butter. It is still a curious fact that experiments made by M. Maisonhaute, according to the Swartz process, failed to secure aroma and flavor in the butter, while in perfumery manufactories it is by the agency of cold that the volatile and essential oils are fixed in fatty substances.

REGIONAL AGRICULTURAL SHOWS.

In the several regional agricultural shows, held and now being held, farmers exhibit a marked desire to purchase implements,—preferring, in the case of reapers and mowers, those of foreign make, although subjected to an entry due of 15 per cent. Many excellent fat bullocks were exhibited, whose mode of treatment is, to commence working them when 24 or 30 months old; at five years they are in the full strength of age, and about seven or eight they are tied up for fattening. The department of the Saône-et-Loire is famous for its local breed of pigs, mostly black and white, and attaining 4 cwts. when 15 months old. They are mostly fed on dairy refuse and cooked potatoes, barley, rye or buckwheat meals, beans, maize and acorns. During the period of separation from the mother and that of being penned for fattening, the young animals have the run of clover and lucerne pasturages. In Britany the native race of long-legged, lanky pigs, are preferred to any English crossings; and in the same region, while the Durham has improved the butter qualities of the Bretagne cow, Ayrshire crossings have diminished them.

THE PHYLLOXERA.

The phylloxera question may be thus summarized: The plague continues to spread; the only effectual remedy is the Faucon plan of flooding in the vineyard in autumn; that the American vines can be safely employed in districts invaded by the bug, and that the sulphurets of carbon and potassium are excellent powders, only their use is too expensive. Finally, the sick vines ought to be well manured. F. C.

*Paris, May* 31, 1877.

## The Farmer's Calling.

"Nature, a mother kind alike to all,
Still grants her bliss at labor's earnest call."

The last autumn, winter and spring were rather out of the usual course of seasons, *i. e.* in the eastern part of West Virginia. The summer and autumn were seasonable. Seed-time was fine; the wheat came up well, but the cold weather set in much earlier than common, and continued long in the spring. In many places the prospect for wheat was not very flattering. The manure and fertilizers previously sown never seemed to act better. Where none was used the grain appears to disadvantage. I am one of those who think wherever grain is sowed or planted, anything that could help it and the best mode of cultivation should be applied to it. If stable manure were put on it, to make assurance doubly sure, apply a compost in which there are more or less ammonia, phosphates and nitre. We can all see how industrious horticulturists make use of well-prepared manures, work the plants and keep down the weeds. No one attempts to grow potatoes in poor ground. Successful graziers and cattlemen have good stands and fine ranges of grasses for their herds; they obtain the best breeds for feeding and grazing. Success should be the end, and the right means used for its attainment. Remember the man that tried to have his horse to live without food, caused him to die on his hands. Labor and food are two essentials in this world. If you wish the desert to bloom like the rose it will require labor and means—a certain portion of the sweat of the brow and brain work. In the present state of the world—the millions of people scattered over its surface—what quantities of food must be grown! There, then, is necessity for agriculture to supply the bodily wants of the people with food and raiment. We can't live and breathe on air only. The different climates afford the needed productions. The North requires rich food and heavy clothing. Nature joined to art accomplishes the needs. More Southern climes afford the luxuries and articles for the convenience and support of the world. Town and country must co-operate. What the one needs the other must supply—between these they must produce the circulating medium, the "open sesame" that finds a welcome everywhere.

Every intelligent being knows that idleness produces want, misery and vice; that intelligence is requisite to operate knowingly; that certain means are necessary to keep soul and body together. Every man should apply himself to his calling, and by helping others he will surely promote his own interest.

The farmer has his mission on earth; his Creator intended him to fill a conspicuous place; his is a living business. By the aid of artizans, the skill of mechanics, his own strong will and sound sense will make the earth a paradise, the country an elysium, and life a blessing. Farmers, whatever your hands see fit to do, do it with a will. Science and labor should go hand in hand. My good friends, and the most of you are farmers, take courage, for better times are in the near future. PHILO.

## Notes from Brighton Grange, No. 60.

*Messrs. Editors American Farmer:*

The regular meeting of Brighton Grange was held at the grange hall, Friday, May 25, 3 p. m.; W. Overseer R. H. Lansdale in the chair, in the absence of W. M. Isaac Hartshorne.

The committee on the new Adamant Plow, claiming public favor, reported that a trial had not yet been made.

The merits of a new burning fluid were briefly discussed and some of its qualities exhibited.

Routine business was transacted.

Then the grange proceeded to the discussion of the special question for the evening, (continued from last month's meeting, which was reported to the *American Farmer*,) namely: "The Line between Political Economy and Partisan Politics."

W. Treasurer W. J. Scofield read an interesting letter from Bro. W. H. Farquhar, W. Lecturer of Olney Grange, which contained several extracts from some remarks of Mr. Sands upon this vitally important question. The tenor of the letter and extracts sent was, that a wide field was open for the advancement of the material interests of the farmer, and that hitherto the field had been unwisely neglected. W. Tr. Scofield introduced the letter by urging upon the grange the propriety and the necessity of prompt and vigorous action in the matter.

W. Ch. Gartrell gave instances of the disregard of the petitions of farmers for suitable laws for their protection, and was in favor of calling meetings in different parts of the country for the agitation of these questions and the education of the masses in regard to their political duties.

Bro. Dawson Lawrence spoke at length on the bearing of the principles of political economy on the farmer's social, domestic and material welfare. Political economy he defined to be, properly interpreted and put into execution, the science of government: partisan politics, as usually exhibited, merely the selfish strife for office,—without any prospect of the material advancement of the interests of the people. He reviewed in detail cases in which judicious legislation would have arrested many of the evils to which we have been exposed by its absence.

Bro. Hutton also spoke briefly on the subject, advancing some excellent views on the two branches of the question.

The feast followed these remarks, after which W. Tr. Scofield offered resolutions appointing a committee to sum up the matter in a report to be presented to the grange at the next meeting,—to the end that the co-operation of the granges of the State might be secured to give effect to the views enunciated.

The committee appointed under the resolutions which were carried is: Messrs. Dawson Lawrence, W. J. Scofield, and sister A. E. Hartshorne.

The grange adjourned in due form, to meet June 22, at 3 p. m.

I think the farmers of the State will hear more upon this question, as Brighton appears determined to take emphatic action in spreading its views on these questions throughout the State, for the education of farmers on this important but much-neglected portion of their public duties.

D. L.

## Judge Fullerton's Farming.

*Editors American Farmer:*

The June number of the *Farmer* contains an article headed, "A New York Farmer in Virginia," describing Judge Fullerton's great success in improving his new farm. I have seen, before, articles of like character in the agricultural journals; but in all cases the exact modus operandi is omitted. If the Judge, or his foreman, Mr. Fletcher, would only plainly state the plan adopted, and the means employed, giving the expense incurred, and net pecuniary profits, if any, he would confer a great benefit upon many farmers in this county. Yours truly, P. A. B.

*Aquasco, Prince George's Co., Md., June 7, '77.*

[The success he has attained would commend to the earnest attention of many farmers in our State and Virginia any narration of the processes towards renovation of Mr. Fullerton's farm, and we join with our correspondent in expressing our confidence in the pleasure and profit that would be derived from an outline of his operations, should the demands upon his time permit him to favor his brother farmers with such a sketch as is proposed.—*Eds. A. F.*]

—To prevent catching cold, the mistake is often made, of taking great care to put on extra wraps and coats when preparing for outdoor exercise. This is not at all necessary in robust persons. Sufficient heat to prevent all risk of chill is generated in the body by exercise. The care should be taken to retain sufficient clothing after exercise, and when at rest, to prevent the heat passing out of the body. Indeed, persons very often catch chills from throwing off extra clothing after exercise, or from sitting about in garments, the material of which is not adapted to prevent the radiation of heat from the body. Linen and cotton under-clothing, when moistend by perspiration parts with heat very rapidly; whereas flannel and silk, being non-conductors, prevent the rapid loss of heat.

# *Live Stock.*

## Practical Essay on Sheep Husbandry.

Mr. Asa Coombs, in reply to a request of the *Western Farmer*, makes the following statement in response as to his experience in the business:

I will in my humble way give my experience. I commenced with a lot of twelve pure Cotswold ewes in 1870, and treated them in the following manner: I will commence with the breeding first. I put the buck with the ewes the first of October. It is five months from the time the ewes are bred until they drop their lambs. So you will have no lambs before the first of March. It will take about six weeks for the ewes to get through lambing—by that time the grass has commenced growing and the ewes don't get poor and the lambs don't get stunted from bad weather. It is very necessary that the ewes should be housed during the time of their lambing.

I should have stated before that thirty or forty ewes are enough for one buck.

I feed my ewes corn and shock fodder, and furnish them all the fodder they can eat; also give them from two to three ears of corn a day, as well as good range and freedom from other stock.

The health of the sheep is the next thing to observe. I give my sheep resin and sulphur in salt and meal, which seems to be of great benefit to them.

A breeding buck should be two years old and over, to produce good strong lambs. Much depends on the constitution of the buck in the success of sheep raising. Always select the most masculine appearance. Every observer of the sheep has seen bucks that wore the appearance very much of ewes; such should be avoided.

As a breeder, I never breed in-and-in. I think the laws of nature are against it.

Cotswold sheep are not as prolific as many other breeds. They require more attention than other breeds, but they will pay for all the extra attention.

I will now give you the amount realized from my twelve ewes in five years: Seven hundred and thirty-eight dollars, besides sixteen ewes left, and also some wool used at home every year.

I lose some of my lambs every year. The yield of wool averages from ten to fourteen pounds though I have clipped as high as eighteen and twenty pounds from some of my sheep.

The Cotswold sheep is very gentle, and not inclined to rogue like some other breeds.

An ordinaay farmer with two or three hundred acres of land, can make it very profitable to keep from thirty to fifty head of good Cotswold sheep. They do not do well in larger numbers together.

What I have said is for the consideration of the smaller farmers who aim to keep from thirty to fifty. I will now speak of the more common class or scrubs. My experience with them has been very satisfactory as to profit. I have for several years been raising scrub sheep. I breed ewes to a pure Cotswold buck and the produce is a fine, large, mutton lamb, which will bring from three and a half to four dollars. I will give you the actual weight of a lot of two hundred lambs weighed at different times from the eighth of June to the twenty-sixth of August. The first eighty head, eighth of June, seventy-four pounds; forty head, 12th day of July, seventy-six pounds; eighty, the remainder, eighty-three pounds, twenty-sixth day of August. The average weight of the lot, seventy-seven pounds and a quarter. They were the product of two hundred and fifty ewes—they sold at three and a half dollars per head. The ewes on the first day of December, weighed ninety-two pounds; so you very readily see the lambs must have improved very much over the ewes from only one cross to a good buck.

I don't make it a rule to house the ewes regularly, but if a ewe has a lamb in bad weather I shelter her. A very good place for ewes to lamb is in a meadow, around a haystack. The stacks serve as a protector from the weather.

I will here give you the result of three hundred and twenty-eight sheep bought the eighth of September, and sold in one year from the time of purchase. Cost nine hundred and sixty dollars. The wool, and lambs, and old sheep, all included, brought two thousand two hundred and seventy dollars, leaving thirteen hundred and ten dollars for keeping them. My profit would have been much more if it had not been for a gang of worthless dogs that broke into my flock the night my ewes commenced lambing; I had eleven lambs come out the first day the ewes commenced lambing; the dogs killed all of them and twenty ewes besides. At the rate the others brought, they would have brought one hundred and fifty dollars.

This lot of ewes had one hundred and eighty-six acres of blue grass land, one hundred shocks of fodder, with fifty barrels of corn. That includes all the feed from the time I bought them until I sold them.

As to improving the breeds of sheep, it can be done with less expense than any other stock. Take a lot of common ewes and put them to pure-bred bucks, and the first lambs will show a great improvement.

I will give you a circumstance that came under my own observation: One of my neighbors bought sixty of such ewes; he also bought three pure-bred bucks from me. He has now one hundred ewes as the result of his purchase, which yielded eight pounds of wool to the head last shearing time. He has been four years making the improvement. He sells all of his buck lambs every year, and his worst old ewes.

There are more cases of the same kind in the neighborhood. I lately saw a lot of sheep that had two crosses from pure-bred animals, and they show as good fleeces as the farmers generally want.

There is an idea among the farmers that a buck from these flocks of improved sheep is as good as a pure-bred one, which is a mistake; and farmers cannot bring their stock up to the perfection they require, until they adopt the plan of breeding to nothing but pure-bred males. It would be perfect folly to breed pure-bred females to scrub males to improve stock.

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East Bloom Grange, No. 196, Ohio, has a young lady for master.

### Sheep and Dogs.

This is the pointed way in which Dr. Janes, the wide-awake Commissioner of Agriculture of Georgia, refers to the cost of the dogs of his State:

The number of sheep killed by dogs in the last twelve months was eight and a half per cent. of the whole, and destroyed by disease and cold only five per cent.

*The value of the sheep annually destroyed in Georgia* is not less than $70,000!—sufficient to pay the expenses of a Constitutional Convention, or a twenty-day session of the Legislature. That amount of money would be wisely expended if it should result in the passage of an effectual sheep-protective dog-law.

*It costs no more to produce a pound of wool than a pound of cotton, and the wool sells for three times the price of cotton.* Again, the one hundred thousand dogs in Georgia consume and destroy food, either already fit for human use, or suitable for feeding to productive animals, an amount which, estimated in bacon, would supply, perhaps, *fifty thousand laboring men!* Perhaps one-fourth, or even one-half, of these dogs are more or less valuable and profitable. The remainder are a curse and a burden. Certainly these considerations merit the careful attention of our legislators.

## *The Dairy.*

### Feeding for Milk and Butter.

From a little manual, entitled "Butter and Butter Making, with the best methods of producing and marketing it," by Willis P. Hazard, a copy of which we have received from the publishers, Messrs. Porter & Coates, Philadelphia, we take the following on the above subject:

Suppose the farmer is about to start in the butter-making; he would naturally be very careful to select those cows which promised to give not only quantity, but quality. It is foreign to our purpose to discuss the different breeds or the best mode of judging of the quality of the cows, but for butter cows we can safely recommend the Jersey, or, popularly styled, Alderney, and the Guernsey. Their cream is very plenty, very rich in butyraceous qualities and of fine color. If not to be had at satisfactory prices, at least one of these breeds to every six cows of other breeds should be kept to color the butter; and if the farmer will get a good Jersey bull, he will soon improve the quality of his herd. To judge a cow for butter, her hide should be thin, soft and mellow, and under the hair of a deep yellow color; her udder should be soft and yellow skinned, well covered with zigzag veins, large and broad; her tail at the end rich yellow; the inside of her ears and around the eyelids yellow. With such marks, and the marks for quantity also, the purchaser will not make a mistake in selecting her. The system of Guenon on escutcheons, or milk-mirrors on the udder and thighs, is invaluable for testing the quantity and quality of milk, and the length of time she will milk up to or near her calving. The cows which give poor milk should be sold to butchers, and their places supplied with good ones.

With a good lot of cows, and a bull that has a good escutcheon, the farmer must pay attention to the feeding and watering. Out of nothing can come nothing; therefore to have good butter we must have good milk. The cow is in an artificial state on a farm, highly stimulated to produce milk as nearly all the time as possible. Therefore the machine must be supplied with the pabulum to turn out milk rich enough to make butter. This it is not in the province of this essay to say much of; but in summer time the cows should have plenty of good rich pasture, so as to fill themselves soon and easily and with sweet and nutritious grass that has strength, so that they may not have to work too hard for their living, and can lie down and chew the cud and make milk. The pastures should be kept clean of weeds, for they will give a bitter taste to the milk, and undefiled by pigs and poultry. There should be groups of trees, necessary for their comfort, and comfort promotes secretion of milk. Water, access to which should be easy and to be had at all times, should always be pure, whether running or in troughs. No access should be allowed to muddy, standing or stagnant water; this is very important, or the milk will not be pure nor the animal healthy. Shade should be provided in each field, where the animals could become cooled and be less annoyed with the flies.

Toward the close of summer and in the fall when the pasture is becoming short, the flow of milk and its richness can be kept up by cutting for them green corn fodder, sorghum, Hungarian grass, or giving them an early crop of sugar-beets. It is very important corn should be sown broadcast or drilled in, so as to materially help out the pasture at this time. Bran with a little corn meal may be fed at evening; it will promote the flow of milk and help keep them in good condition to commence the winter with.

In winter they should be fed upon the best of hay; clover and timothy mixed makes the best, and if cut early and cured to be as near the summer grass as possible, it is the best for a reliance. In addition, they should have about ten quarts bran and corn meal mixed; mangolds, carrots, parsnips, small potatoes and such roots, for variety and to keep their systems open. Corn-fodder or blades, shorts, middlings, oil-cake, pumpkins, etc., are all good. Corn-fodder alone or as a reliance will not make good butter. The effect of clover upon the supply of milk is well known; the dry material of it is equal to beans for albumen. Albuminous matter is the most essential element of food for the milch-cow, and any deficiency in the supply will be attended with loss of condition and diminution in the quality of her milk. A cow can yield a far greater weight of butter than she can store up in fat. A cow may give two pounds of butter a day, while half that quantity would not be laid on in fat if she was fed for that purpose. Winter is the time it is most difficult to produce good-colored butter and free from streaks, and the harder to come; judicious feeding will help this very much. Where

the stock kept is numerous enough, it will pay well to steam or cook the food and feed the hay-tea to the cows; with a little salt through it, they will eat up everything greedily. A lump of rock-salt should always be where they can have access to it.

FEEDING TURNIPS AND CABBAGE.

The ease with which turnips and cabbage can be grown, and the quantity produced on an acre, induces many farmers to feed them to their milch-cows. This should never be done where good butter is desired. They make most admirable feed for sheep, improving and making the mutton more juicy; also they are good for steers and dry cows. But it does seem impossible to prevent their flavoring the milk. If they must be fed, the best way is not to give the turnips or cabbage to the cows just before milking, but only immediately after the milking is done, particularly at night. A little cornmeal with salt sprinkled over them after they are chopped up is also an improvement.

If you *have* fed the turnips and *have* got the taste in the milk, then, when you put the milk into the pans, to every eight quarts mix one of boiling water. This will annihilate the taste of the turnips, and facilitate the rising and the churning of the cream. But do not attempt to put such butter up for keeping; use it or sell it within a short time.

Another receipt is: Put a piece of saltpetre the size of a pea into the pail before milking; the heat of the milk will dissolve it and destroy the taste of the turnips. Another is: Put a teacupful of sour cream into the clean cream-jar, then empty the milk into it on the sour cream. Another is: Put your milk in a kettle, then place the kettle inside of a larger one on the stove that has boiling water in it; stir gently the milk or cream until lukewarm, then to every two gallons throw in one ounce saltpetre, powdered fine, and continue stirring until so hot you cannot bear your finger in the milk or cream. Then remove the milk-kettle and pour the milk into the churn. Repeat the process with the rest of the milk or cream. Cover the churn, and put it in a cold place for the night, or at least till the cream or milk is quite cold again; then churn in the usual manner. Do not add any hot water while churning. Another is: Add to every two gallons of milk, as it is drawn, a dessertspoonful of a solution of nitre; or, add to every gallon a tablespoonful of the clear solution of half an ounce of chloride of lime in a gallon of water.

COLORING BUTTER.

It has become a common practice to color butter with the extract of annatto to help its sale. This is all wrong. The color should be derived from the food, and only from early cured hay of the best quality and cornmeal can this be done. The cow must be well wintered to produce good buttter.

As it is the general practice to color butter, we may as well give the best processes by which it is done. A small quantity of annatto dissolved in warm water or milk is put into the cream before churning. But a richer tint is produced by coloring the butter directly. To prepare the annatto for this, steep it in butter for some hours over a slow fire, then strain through a fine cloth into a jar and keep in a cool place. When ready to work the butter, melt a small quantity of this mixture and work it in carefully. An inexperienced hand is apt to work the butter too much in endeavoring to produce the same shade of color throughout. Coloring in the cream obviates this difficulty. Carrots of the deep yellow or orange variety give the most natural color and agreeable flavor. They should be grated, the juice expressed through a thin cloth and put into the cream before churning.

The best and sweetest butter is produced in May and June (never so good in August and November,) for then there is a supply of rich, juicy food, and the air is pure, and all things combine to render the dairyman's task easy and delightful. But when the sun has scorched the vegetation and impaired its nutritive properties, and the temperature of the atmosphere is like an oven, then there is need of skill in providing succulent food, and counteracting the opposing influences of Nature. And still later the supply of roots, pumpkins, etc., will keep up the good color and richness of the butter in December. In winter the stables must be kept warm, but not with confined air. The stables can be kept sweet by the daily use of plaster, charcoal, prepared muck, or an occasional sprinkling of dilute sulphuric acid or solution of copperas. The cows should be put out nearly every day for air and exercise. They must at all times have suitable shelter.

## Baltimore Co. (Md.) Grange, No. 13.

This grange held its quarterly meeting at the hall of Nanjemoy Grange on the 12th June,—a delegation from ten of the eleven granges in the county being in attendance, besides a large number of visitors. The annual election of officers consumed considerable time and resulted as below. The Master, Secretary and Treasurer were reëlected, and Col. Jenifer was transferred from the Chaplain's to the Overseer's chair.

Master, Col. B. F. Taylor; Overseer, Col. Danl. Jenifer; Lecturer, Chas. T. Cockey; Chaplain, Rev. Chas. J. Hendley; Steward, Dickinson Gorsuch; Assistant Steward, Chas. W. Semmes; Secretary, Wm. B. Sands; Treasurer, Thos. B. Todd; Gatekeeper, Jos. B. Hutchins; Ceres, Mrs. C. Lyon Rogers; Pomona, Mrs. James L. Ridgeley, Jr.; Flora, Miss Belle Brackenridge; Lady Assistant Steward, Miss Ella Jones.

A bountiful dinner had been provided by the members of Nanjemoy and Gunpowder granges, to which full justice was done by the delegates, as well as by a large company of visitors, patrons and others.

The officers elect were not installed, it having been determined to perform that ceremony publicly at the next quarterly meeting, which will take place September 18th, at the hall of Centennial Grange, No. 160, and at which time it is probable there will be some addresses by well-known members of he order.

## Work for the Month—July.

From every side we have gratifying reports of the probable yields of the ripening crops. It becomes the farmer to be diligent and watchful in properly securing what has cost so much in labor and patience.

**The Wheat Harvest** will be over in most sections when this issue of the *Farmer* reaches its readers, when, if any steps remain to save the crops, let them be immediately taken. When it can be threshed without stacking or putting into the barn, so much the better.

**Hay Harvest** will need to be pushed forward as much as possible. The copious, satisfactory and interesting reports on Timothy, as grown and saved in Cecil county, which will be found elsewhere in this number, renders unnecessary anything further from us on this topic. We assume that all interested will read that admirable series of papers.

**Cultivation of Corn.**—The crop ought to be ready to lay by. The crop should be kept clean by frequent shallow workings, which also maintains a porous condition of the soil, which then is fit to absorb the moisture and fertilizing properties in the atmosphere. As a rule, the drier the season the greater the need for frequently stirring the soil. In very dry seasons alternate rows are sometimes cultivated, so that the damage done the plants by the necessary breaking of the roots is recovered by the time the cultivator is run down the other side.

**Millet and Hungarian.**—Crops of these may be put in up to the middle of the month on good land. It should be plowed deeply and well pulverized, and, if deficient in quality, well-fertilized to produce a large yield of these useful forage crops. German Millet, with extremely few exceptions, seems to stand as high as heretofore in public favor.

**Fodder Corn** may be sown up to the end of the month, in drills, through which the cultivator should be run once or twice. More experience has shown there is little trouble in curing it. Cut at the time when the pollen is falling freely; allow it to lie on the ground; then put it up in small shocks or pile it against the fence in layers a foot or more thick. These layers may be gradually increased in thickness, if convenient, adding a layer of stalks occasionally, and the fodder comes out sweet, green and free from mildew.

**Buckwheat** should be sown on land in good condition. Apply 150 pounds of super-phosphate, sow half a bushel of seed, harrow in and drill. It must be cut before the seeds are all fully ripe, or the loss from shattering will be excessive.

**Tobacco** needs, of course, careful working, that the grass may be kept down and the land left clean and open.

**Potatoes** should be kept clean. An occasional dusting of plaster, ashes and salt, mixed, is effective, when it can be given at the rate say a bushel of each to the acre. But the chief point is to keep the soil porous and clean.

**Turnips.**—Sow Ruta Bagas up to the 20th of the month, in this latitude. By sowing just before a rain, when practicable, quick germination is secured of the seed. Flat turnips may be sown from the 25th of this to the same date next month. The early sown give larger yields, but the roots are not such good keepers. A good sandy loam is the best soil for both kinds, and new land is especially favorable. Ashes are a peculiarly good application, and super-phosphates seem equally as effective. The flat turnips are generally sown broadcast and lightly harrowed or brushed up,—a pound to the acre being sufficient. To avoid the depredations of the fly, a dusting of air-slaked lime, fine ashes, plaster, &c., is useful. As soon as the plants reach the rough leaf they are safe, so that the surest escape is to push them rapidly ahead.

**Root Crops** of all kinds need to be thoroughly drilled that the surface may not become crusted, and that weeds and grass do not take the nourishment which the crop should get.

**Meadows.**—Where these are to be set in August, preparation should be made by deep and thorough plowing and repeated harrowing, that the finest tilth may be secured. See for some points of great value the letters of our Cecil county friends.

**Live Stock.**—All kinds need some extra care. Be careful that working animals do not suffer from want of regularity in feeding and watering. Have tar provided in the sheep's troughs to protect them against the fly. When practicable give hogs green food regularly; or, what is better, let them have the run of a clover field.

**Fences.**—Repair these where needed, and have the corners thoroughly cleaned out.

## Vegetable Garden.

**July.**—All spaces left vacant by other crops should be filled up by late crops, such as cabbage, turnips, spinach, &c., and not allowed to lie waste for weeds to take possession of. All the remains of early crops, rubbish, &c., should be removed to the compost heap. Their presence in the garden disfigures it, and the seeds of weeds maturing make much work and trouble for the future.

Beans may still be planted, if the ground is rich; and cucumbers for pickles may be sown, if done at once. The first planting of celery will soon require to be earthed up, using great caution to keep the hearts free from earth, which causes rust. Water should be given copiously when available to the later plantings, and to cauliflowers. Cabbage and cauliflowers should be well worked, and the earth drawn up to their stems. Lettuce for fall use should only be sown in a cool, rich place. Sow spinach in drills 16 inches wide. Sow ruta bagas to the middle of the month, and flat red-top turnips towards the end.

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"The honor of labor is the watchword of our Agricultural College; and no man can measure the influence of this leaven in the mass of the State."—*Southern Planter, Richmond, Va.*

Why cannot we have such a wholesome leaven disseminated through the agricultural mass of Maryland?

# *Horticulture.*

## The Maryland Horticultural Society.

The June exhibition, like the preceding one, was held in the concert hall of the Academy of Music,—one of the series of garden concerts taking place in the main auditorium at the same time, and drawing a large concourse of visitors.

The display of plants was not so large as at some previous monthly shows, but the collections of cut flowers were numerous and profuse. Some of the largest usual contributors were not represented at all,—included amongst these were Messrs. John Feast and Wm. Fraser. Some strawberries and cherries were shown, but not in abundance.

James Pentland occupied two large tables with an attractive collection of foliage and flowering plants, Ferns, &c. Robt. J. Halliday had a small but choice assortment, including Palms, Dracænas, Selaginellas, Fuchsias, &c.; Andrew Patterson exhibited fine Pelargoniums and cut Roses; Robt. Patterson, Fuchsias and hanging baskets.

Wm. H. Perot had a choice display of Pelargoniums, Selaginellas, Gloxinias, the new Hydrangea "Thomas Hogg," cut roses, &c.; W. W. Spence made an entry of plants, few in number, but conspicuous for their beauty and handsome growth, and including a fine specimen of the African Lily (Agapanthus umbellatus;) a charming Heath, Lobelia and Allamanda; R. W. L. Rasin sent in some very fine Palms, well-grown and colored Crotons, other foliage plants, two hanging baskets, and one composed of cut flowers and fruits.

Wm. D. Brackenridge brought in a large and showy collection of cut blooms, mostly of out-of-doors plants; John Saul, of Washington, D. C., exhibited an extensive variety of the various classes of Roses and a collection of other cut flowers mostly grown under glass; August Hoen showed 60 varieties of Roses and numerous other cut flowers of tender and hardy sorts.

Jno. Cook exhibited a fine assortment of strawberries, comprising the new varieties "Star of the West," "Champion" and "Cumberland Triumph;" besides the older sorts, amongst them enormous specimens of "Monarch of the West," "Triumphe de Gand," "Boyden's No. 30," and others. He had also a fine collection of cut flowers. Dr. I. D. Thompson had a display of strawberries mainly of the same kinds; G. W. Ridgeley had "Magnum Bonum" Strawberries, and some fine Asparagus, which he called "Marrow Colossol."

Of Cherries, E. Law Rogers had a numerous collection. Andrew L. Black and Jno. E. Feast had designs of cut flowers; Miss Maggie Patterson, hand bouquets; Miss Lizzie Patterson (aged 11 years) a bouquet neatly arranged of indigenous flowers; E. Hoen, hanging baskets; and Captain Snow, some fine blooms of Orchids.

AWARDS.

The judges were Messrs. J. Mowton Saunders and C. H. Snow, and the following prizes were given:

Best 24 named Roses, $5; best 12 Teas, $2; best 12 Bourbons, $2; best 12 Noisette and China, $2, John Saul, Washington, D. C.; best 12 Remontant Roses, $2, W. H. Perot; best 6 Ornamental Foliage Plants, $4; best 6 Variegated Foliage Plants, $4; best single specimen Variegated Foliage Plant, $3; best 6 Palms, $4; best basket of cut flowers, $3, R. W. L. Rasin; best 6 Lycopodiums, $2; best 6 Gloxinias, $3, W. H. Perot; best 6 Pelargoniums, $4, Andrew Patterson; best 6 Fuchsias, $3; best 12 Ferns, $4, Jas. Pentland; best pair Hand Bouquets, $3, Miss Maggie Patterson; best pair Hanging Baskets, $2, Ernest Hoen; best and most artistic Table Design, $5, Jno. E. Feast; best and largest collection of Cut Flowers, $4, John Saul; best Bouquet of Indigenous Flowers (competition limited to juveniles under 16 years) $3, Miss Lizzie Patterson; best and largest collection of Strawberries, $3; best 6 varieties, $3; best new variety, $2, John Cook; best collection Cherries, $2, best quart do., $1, E. Law Rogers.

Special commendation was given to W. W. Spence "for a very handsomely-grown Agapanthus umbellatus, an Erica ventricosa, remarkably well-grown and flowered, and a fine Lobelia erinus;" and honorable mention was made of Capt. Snow's Orchid blooms.

## Potomac Fruit-Growers.

JUNE MEETING.

*Messrs. Editors American Farmer:*

The June gatherings of our Society are always joyous, for then we crown the strawberry the queen of fruits; but to add to the pleasure of this meeting, it was decided to hold our strawberry exposition on board the Mary Washington, combining the *utile cum dulce*,—having a pic-nic for ourselves and friends as well as our usual fruit exhibition. And so, while steaming down the noble Potomac, our fruits were discussed, their merits compared, qualities criticised, the various preferences expressed, and our Society business transacted.

Charming was our queen on her throne, flower-gemmed and wreathed with evergreens, on that promenade deck, and what with music and song and scenery, we were grateful that "our lines were cast in pleasant places."

On exhibition were the Monarch of the West, Star of the West, N. J. Scarlet, Wilson's Albany, Highland Beauty, (a local fruit of great promise) Stewart, Triumphe de Gand, Fillmore, Col. Cheeney, etc. The Monarch and Star were, doubtless, the best berries, and next in order was the Stewart, though the Highland Beauty, without doubt, is the peer of each of them.

Of cherries, the May Duke, Empress Eugenie, etc.

Prof. J. Brainard read a paper on The Toad, the Friend of the Fruit-Growers, (in substance as follows:) Cultivators of the soil have to contend with a great army of insects, which are constantly preying upon the labor of their hands and blasting their cherished hopes. But while these enemies are thus arrayed against the husbandman, he yet finds in the insectiverous birds friends who come to his aid in destroying these

pests, and who afford a partial protection, at least, against the insects and their havoc.

But these friends are too often ruthlessly destroyed, and, as a consequence, the ravages of the insects are greatly increased. It is a well-ascertained truth, that, before the wanton destruction of prairie hens and quails of the West, the grasshopper plague was unknown. Spare the birds and save your crops!

I now have the pleasure of introducing another friend of the fruit-grower: the common toad,—*Bufo Vulgaris*,—a reptile whose advent into our world was long antecedent to that of man. The progenitor of this reptile was an animal not to be despised in his day; and should we now meet with a specimen weighing a thousand pounds or more, with either jaw armed with a hundred teeth, we should at least respect his power!

Formerly the toad was considered a venomous reptile, but in our day its habits have been more carefully observed, and its great value to the horticulturist has been fully established, because of its propensity for destroying insects that are injurious to vegetation.

We should cultivate the friendship and crave the assistance of the insect-destroying reptiles, including the striped snake and the tree toad, as well as the birds. Every good and tidy housewife detests the presence of cock-roaches and other vermin. Two or three domesticated toads would keep the coast clear of these and other vermin, and will be found more desirable than a cat, as the toad is wholly free from trespassing on the vested rights of man, as does the cat.

The toad is possessed of a timid and retiring disposition, loving dark corners and shady places, but under kind treatment will become quite tame. Numerous instances could be cited of pet toads remaining several years in the family, and doing a valuable service with no other compensation than immunity from persecution.

No one can study its anatomy without being convinced of its perfect adaptation for the sphere it fills in the economy of nature. Its tongue, which is capable of great elongation, is attached to the anterior portion of its lower jaw; its free end, when the toad is in repose, extending down to the very borders of the stomach. The moment it sees its prey, its eyes sparkle, its toes twitch, and quicker than the eye can follow, the insect is transfixed and conveyed to the stomach of the captor.

In Europe toads are carried to market and sold to the horticulturists, who, by their valuable service, are able to hold in check the multiplication of those insect tribes that prey upon their fruits and flowers. All that is necessary to secure their coöperation, either in doors or out, is to provide them with a cool and safe retreat by day, with convenient access to water, and they will go forth to the performance of their nocturnal duties, and guard and protect the labor of our hands "without money and without price."

Then let us care for the well-being not only of the insectiverous birds but the hitherto-despised and hated toad! G. F. NEEDHAM.

*Washington, D. C.*, 1877.

## Virginia at the Pomological Meeting.

Mr. Leighton does not mean that Virginia shall be laggard at the coming session of the Pomological Society if he can help it. Below we give an address which he has issued. We hope other States, and especially our own, will be as active in preparation.

*To the Press of Virginia:*

The sixteenth session of the American Pomological Society will be held in Baltimore on the 12th, 13th, and 14th of September next, and is a most important event in Virginia's interests.

A word to the immigration movers.

Nebraska sent delegates to our capital in 1871 that accomplished in three days what the combined immigration organizations of this State have failed to accomplish in as many years.

They came with apples of their own production, and took the first prize.

Within sixty days therafter it was heralded throughout the emigrating countries of Europe that Nebraska was the best apple portion of America, so endorsed by her National Society; and some of Nebraska's leading men have regarded that honor as of greater value to that State than the payment of one year of her State tax.

The greater portion of immigrants have a taste for fruit culture, more or less, and the endorsement of the National Society is received by them as conclusive.

Some one from the Piedmont section brought a pocket full of apples for the table in 1871, which were larger than any from Nebraska, and I have seen as fine apples on the tables at our State Fair as have graced exhibition tables in any part of the country.

The State has withheld aid in placing her fruits in competition with other States on account of her indebtedness—same as farmer H. did; he being involved refused to purchase seed, consequently gave his crop the go-by until something more favorable might turn up.

How long can Virginia afford to rest back on her aged relaxation, and look with complacency on her young sisters bedecking themselves with laurels rightfully her own?

I appeal to the agricultural and all kindred societies and fruit-growers to make vigorous efforts to place Virginia's fruits on the tables at Baltimore, so that we may not only understand our status ourselves, but may let our friends across the water understand what we are doing.

The rapidly-increasing export of apples points to this country as the apple orchard of the world, and Virginia's pippins have led the list in price for export purposes.

It may be many years before we shall be able to put our fruits so conveniently on the national table as the coming season; let us substitute action once for talk and fill the tables to overflowing.

The society has one vice-president from each State, and they are called upon this year to furnish what information they can obtain relative to the introduction and progress of fruit culture, prior to this year, as a record of

the first pomological epoch of this country's settlement.

I would be thankful to receive communications giving the desired information from any portions of the State. G. F. B. LEIGHTON,

Virginia Vice-President,
American Pomological Society.

*Norfolk, Va., June 15th*, 1877.

## Norfolk (Va.) Horticultural Exhibition.

The first show of the Society was held on 26th May, and we learn from the *Public Ledger* that a number of very fine specimens of plants were exhibited; and to the President, Mr. Leighton, and the committees, is awarded great praise for their untiring energy. The ladies of Norfolk and vicinity did themselves great credit by the number and beauty of the plants and fruits and flowers they exhibited, which, from the account given in the *Ledger*, must have had a very grand effect. We cannot spare room for the description of the offerings made, but the success was so marked as to have encouraged the Society to prepare for a fall exhibition.

Amongst other exhibitors we notice the names of Mr. Thomas McGlennan, florist: a fine collection of greenhouse plants; abutilons, canna, aloes, new and rare, fine parlor bouquets, hanging basket, &c.

Col. G. F. B. Leighton: a magnificent table-design; a collection of plants; a fine collection of hybrid perpetuals and other roses, which have been renewed each morning of the exhibition, for which he deserves the acknowledgments of the Society.

Prof. Daniel Barker, florist: a beautiful terra-cotta window box; a collection of new double petunias and new geraniums; a pan of cut flowers of new double petunias, &c.

## Meeting of the American Pomological Society.

*Messrs. Editors American Farmer:*

The fifteenth session of this great National Society which is to be held in the city of Baltimore on the 15th and succeeding days of September next, will command the special attention of fruit-growers. This is expected to be the most numerously-attended and also the most interesting exhibition ever held by this society. Not only a full attendance of its own members is expected, but also that of delegations from all kindred societies in the United States, and also those of the British Provinces, and by all persons interested in the cultivation of fruits, vegetables and flowers. In conjunction with this show, and at the same time and place, the extensive exhibition of the "Maryland Horticultural Society" will be held. This is a *live institution*; and, perhaps, unsurpassed in any respect by any other of the same sort, save the great national institution. These, acting in conjunction, must afford facilities for exhibiting, comparing and testing fruits, &c., never before presented under circumstances so auspicious, affording all portions of our continent opportunity to prove what can be achieved in these important branches of agriculture.

The meeting and joint operation of these societies, at one and the same time, and at a central and convenient point, is a very great advantage. It will have salutary effects in numerous ways. Among the rest to show the improvement and peculiarities of American horticulture—the various effects produced by latitudes and soils throughout our extended country. Culturists may be truly informed where varieties are at home, what to select and what to reject in all the extensive lists embraced in our horticulture; and as it is believed many worthless sorts are listed and propagated, we hope these catalogues will be overhauled and purged. We all know that the fruit catalogues are encumbered with the names of worthless and medium sorts. Let us have a chance for the best varieties. Get the nomenclature right. Let the society exert itself in these and other directions, and rapid progress and improvement must and will inevitably follow.

*Keswick Depot, Alb. Co., Va.* J. FITZ.

## The "Neunan" Strawberry.

Mr. Robert Chisolm, formerly of Beaufort District, now of Charleston, S. C., kindly sent us in May, specimens of this seedling of Wilson's Albany, and a great shipping berry from Charleston to the North. He says of it: "My plants are many of them eighteen inches high, and a friend told me that they are capable of bearing one quart to each plant, and, judging by my plants, I believe it. It is a most vigorous grower and produces runners almost without number. I do not know how it may suit your climate and soil, but it is well worth a trial. If you should desire any plants it would give me much pleasure to send you a few by mail. I have the Triumphe of Ghent and Jucunda, but neither compares with the Neunan, either in growth or productiveness, but my plants of the latter are from Palmyra, New York."

[The berries, unfortunately, did not reach us till their condition was so much impaired that it was impossible to judge of their merits. We should be pleased to receive a few of the plants when convenient.—EDS.]

# The Vineyard.

## The Grape and Wine Question.

*In Vino Veritas.*

*Messrs. Editors American Farmer:*

Although Mr. C. A. Heineken considers it a waste of space in your valuable *Farmer* to discuss the question whether the practice of Gallizing is right or wrong, I take the liberty to resume the consideration of it again,—holding it to be the first condition of our future success, that those who attempt to make wine in this country are correctly enlightened on that subject.

The fights in the old country on that subject have come to a close, and Dr. Gall's theory has been condemned there as irrational, and entirely abandoned so many years ago that, of the present

generation of vineyardists, only those have a knowledge of its existence who, like me, have become gray with age in the business. But in this country the matter stands different; here the business is in its infancy, and it is the imperative duty of those few men among us who have knowledge and experience in it to correct erroneous doctrines spread by such men who can only speak from hearsay.

The theory of adding or taking from must that which Dame Nature has either furnished in too great abundance, or which is deficient, and the idea that as long as wines are produced the majority of vineyardists will believe in Gallizing, and try to correct the deficiencies of poor grapes and poor seasons, are phantoms that can be found only in the heads of men who never have lived among vineyardists. The French government has not legalized the adulteration of wine by refunding the tax on brandy used for that purpose, this being intended only for wines which are to be shipped across the equinoctial line.

Mr. Heineken is blaming our grapes for the failure of making good wine in this country, while I hold that several of our varieties are much nearer up to the European standard than most of our grape-growers and wine-makers, and that is where the trouble lies. It never will answer to plant a grape which is not fit to make wine of, only because it is healthy and productive in an unsuitable locality, or to manage such a vineyard like a cornfield, fill the unripe juice of the grape in old stinking whiskey barrels, try to correct the deficiencies with sugar and other ingredients, and then claim that it is a Claret, a Sherry, Madeira or Johannisberger.

In regard to what class of wines we are to make, we cannot exclusively be guided by what the general public will prefer to buy: this being to a considerable degree dependent on the character of the material we have to make wine of.

The way to overcome the prejudice against native wines is not so difficult to find. First, we have to offer a good article of wine, and so to remove the fact that the existing prejudice is founded, and then we have to strain our combined efforts in order to introduce that wine in the market. For that purpose I proposed in my letter in the May number of the *Farmer* the organizing of a

VIRGINIA AND MARYLAND GRAPE-GROWERS' ASSOCIATION.

In the June number of the *Farmer* I issued an invitation to all interested in the grape and wine question in the States of Virginia and Maryland to meet at Baltimore on Thursday, September 13th, for the purpose of discussing the question of the propriety of organizing the said Association, and eventually organizing the same, and promised at the same time to publish in this number of the *Farmer* a detailed plan for the organization. But I have since abandoned the latter idea, having come to the conclusion that it would be more proper to organize the Association at the meeting first, simply for the purpose of representing the interests of the vineyards of the two States, and then to appoint a committee, the duty of which shall be to draw a constitution and rules to work by, which shall be laid before a subsequent meeting of the Association for ratification.

LOUIS OTT.

*Greenfield, Nelson Co., Va.*

## Wine-Growers' Association.

*Editors American Farmer:*

The last number of your journal contains a letter from Mr. Ott, of Nelson Co., Va., in which he suggests the formation of a grape-growers' association, and that a meeting for the purpose be held in Baltimore on the 13th day of next September. This appeal is too important to be unheeded, and I sincerely hope that the viniculturists of Maryland and Virginia will respond gladly to the call and unite in organizing an association which seems essential to the success of their labors at this critical period in the history of our enterprise. I have long been convinced of the necessity for such action on our part, and shall cheerfully co-operate with Mr. Ott and my brother wine-growers in the meeting. It will take place at a busy time with us, viz: about the beginning of the vintage; but I trust none will fail to attend. Apart from the business of organizing the association (which will probably occupy but a few hours, if the plan is ventilated in your pages beforehand) we shall be compensated for the visit to Baltimore at that time by the great pomological and horticultural exhibition for which you are preparing.

The time will come when pure wines of native growth will be as extensively consumed in this country as in Germany or France, and when there will be dealers in our towns as ready to buy our crops of wine as those of corn and tobacco; but just now some union and concert of action among growers seems necessary to establish a market for their products. There are obstacles and prejudices to overcome which no single cultivator can successfully encounter. The foreign growers have long held possession of our markets, and have created a taste for certain wines, many of which are entirely artificial, and have no more of the grape in them than is obtained by *soaking raisins in water*. Fashion and taste in wines are ever changing, more especially among nations where the vine is not grown, and there is no reason why American wines should not become popular with our people. Since the ravages of the phylloxera in Europe, France has been importing millions of our hardy American vines. In a few years the French merchants will be exporting to the United States wines made from those vines. But whether they will let us have them in their pure state and natural flavor, or whether they will be drugged to imitate their old brands of wine, remains to be seen. It is well known that they buy immense quantities of our whiskey and sell it back to us as *Cognac* brandy.

The California wine-growers are also filling our eastern cities with their products. If the Maryland and Virginia growers desire to retain a place in their own markets, it is certainly time for us to be stirring.

We need a responsible agency in some of the great marts of trade, to which we can send our wines to be manipulated and sold by some active

and intelligent person who shall be interested in the sale of our products and *none others*. He should be constantly engaged in publishing their merits and in pressing their claims upon consumers, and be ever ready to invite comparison with others in quality and prices.

I hope every wine-grower, who can possibly do so, will attend the proposed meeting in Baltimore. We are not many, and we have no light task before us. Unless we can obtain a market we shall have planted our vines and builded our cellars in vain. Yours truly, L. GIDDINGS.

*Severn Vineyard, Annapolis, Md.*

## Floriculture, &c.—July, 1877.

By W. D. BRACKENRIDGE, Florist and Nurseryman, Govanstown, Baltimore County, Md.

There are only a very limited number of tropical plants now in cultivation that give satisfaction when grown under glass during our summer months. It is found better to remove the great majority to some sheltered situation in the open air, and by either plunging the pots half way up to the brim in coal ashes or some other porous substance that will not engender earth-worms. A semi-tropical display may be produced by planting in groups, in the border or lawn, such as Musas, Cannas, Dracænas, Marantas, Hedychiums and Alpinias; all such and many more are suitable subjects for this purpose, and can readily be taken up early in the fall. But we return to the conservatory and see what things may be grown with success there, and the first we note is Allamanda, all the species of which, when well grown, produce a profusion of orange or yellow flowers during the "dog-days;" and then we have those brilliant flowering Begonias, as B. Royalty and B. Bolivensis, to which may be added B. Vesuvius. The ornamental foliage Begonias are also very desirable; a few such as B. Metallica, Rex and Princess Charlotte, give tint and character to any collection. Tydœas and the various kinds of Achimenes, if grown in baskets interspersed with a few small-leaved Adiantums, form gay objects and readily attract the eye. No collection should be without one or two plants of Clerodendron Balfourii. There is an elegance about it which few plants possess. C. splendens and fallox are more erect in growth, and withal more stately plants, but they lack in grace and beauty of flower.

We have never been able to divine why people who have glass houses do not take hold of and cultivate a few orchids. This failure may spring from an idea that they are difficult to cultivate, and we admit that a vast number of the very finest kinds will not succed under the treatment which our ordinary greenhouse plants receive; and should a trial be made, it will be found that, with a little care exercised in potting and watering, the following kinds will thrive in a low temperature, or that at which an ordinary greenhouse is kept,—ranging from 40 to 60°,—viz: Cattleya Forbesii, Barkeria Spectabilis, Dendrobium nobile, Epidendrum aromaticum, Lœlia autumnalis and anceps, Odontoglossum grande, Oucidnum Barkeri, Zygopetalum Mackayi, Stanhopea grandiflora. All these we name above are what is termed Epiphites, (growing on branches of trees or rocks) but there are also a few terrestrial kinds which claim our attention, viz:

Calanthe veratrifolia, Bletia hyacinthina, Limodorum Tankervilliæ, Cypripedium insigne and C. venustum. These latter like a compost of old cow manure, peat, turfy loam and sand, observing to drain the pots well.

Public taste has run strong of late on what is called "foliage plants;" that is, plants with strong markings of various colors of leaf—or it may often be that the leaves are peculiarly or finely divided. To the first class belong the Croton, of which there are a great many very charming varieties, and, to have them in good condition, a high temperature has to be kept up, and our idea about them is, that, for lack of proper culture, they will soon be set aside, like many other good standard plants that are difficult to cultivate. For variety and beauty in the tints of their foliage the many varieties of Caladium are not excelled, and ought to be grown by every votary of Flora, as these, co-mingled with a few graceful ferns, form a maze of unsurpassed beauty. There is another very neat and beautiful plant, belonging te the Caladium family, having narrow, firm leaves, and flowers whose spathe is of a brilliant scarlet color; there are also other varieties of this plant, some of which have flowers with white spathes; neither of them is difficult to cultivate.

All attention necessary in the glass-house at this season, is to see that plants do not suffer by the sun acting too strongly upon them through specks in the glass; and use the syringe freely to keep up a proper humidity; but, if you have any Gymnogrammas of the gold or silver farina kinds, do not syringe them overhead, else they will sicken. Give all the air in fine weather possible.

### FLOWER-GARDEN AND PLEASURE-GROUNDS.

It is a good time now, while the leaves are on shade trees, to mark such as are encroaching on its neighbor, a road, or, perhaps, on some fine evergreen; and, should time permit, we advise the pruning to be done now, as the cuts made will heal up much sooner than at any other season of the year. This demand for pruning is caused, in most instances, by close planting in the first instance, and lack of courage or nerve to grub out such as are superfluous; one good, well-developed tree in all its parts is, in our view, worth half a dozen of long poles with something like a broom at top.

If trees that were moved last winter or spring appear to be languid in growth, this may come from two causes,—either that the branches have not been cut back enough, or the want of moisture at the root; if the first be the cause, then cut the branches back farther; but if it is the second, then open the surface with a pick or crowbar, and give enough of water to penetrate beyond the roots, and, when this is done, put a mulching of two to three inches in thickness over and beyond where the roots extend.

We advise care in not mowing the grass on the lawn often during this month and that of August, and, when it is mown, both the machine and scythe ought to be set high, so as to leave a good nap of grass, thus preventing the sun from penetrating to the roots.

Should dry weather set in, and water is not convenient with which to sprinkle your flower beds, in such a case we have found it equally as good—and, we believe, better for the plants—to stir the surface of the beds frequently by either hoe or rake; this answers also the purpose of subduing all weeds when in a small state, thus saving labor and causing the whole to look trim and clean.

When the ribbon style of planting has to be adopted, it will frequently be necessary to pinch back all straggling growths, so that each ribbon may stand well defined.

We, and we hope other readers likewise, admired that little cut and description of the "Thrift or Sea Pink" in your last. Our acquaintance with it was made somewhat over fifty years ago, and then knew it as Armeria maritima, not *Statice;* this, with the A. vulgaris, are well adapted for rock work or edgings to flower-beds and walks; they thrive well almost anywhere, but do best near the seaboard.

## Rhododendrons.

*Messrs. Editors American Farmer:*

Soils containing lime, and those of a sharp, gravelly nature, will not grow the Rhododendron. We have heard it asserted that plants of this nature must have peat soil, and there is no doubt whatever that nice, sweet peat soil is well suited to their requirements; but that it is absolutely neccessary is contrary to our experience, and, rather than use the sour, black-looking stuff we have often heard called peat, we would prefer to take the chances with the soil ordinarily used for soft-wooded stuff.

In pot culture of Rhododendrons, Azaleas, &c., thorough drainage is a prime necessity, and without it neither can be grown to the highest state of perfection, no matter how congenial all other circumstances may be.

It should be borne in mind that a certain degree of cold is necessary to mature the wood, and that several degrees of frost is not injurious to the tender varieties, providing the atmosphere is still, and the sun does not shine upon them when they are in a frozen state. These conditions may best be secured by having a house with a northern exposure, and a house for the purpose need be neither expensive nor ornamented—unless desired—but just plain and useful. In such a house would thrive the tender varieties of Rhododendrons, the hardier kinds of Camellia, and some other subjects needing the same general treatment. From such a house plants could be taken to the forcing house or pits,—where the necessities of an establishment require it—remembering at all times that the better plan in forcing such subjects is to persuade them to make growth early in the season, so as to give nature time to elaborate the material necessary to the formation of fine bloom.

A Rhododendron to look well as a single plant must be a noble specimen; they look much better in clumps, and there are hundreds of places around Baltimore where they would thrive admirably; and if the following were planted in contiguity to them they would have a fine effect: Gynerium Argenteum, G. roseum, Arundo donax variegata, Caladium esculentum, and others of a sub-tropical nature; to which might be added some of the handsomer growing evergreen shrubs as Retinosporas, Junipers, &c. This would create a pleasing diversity, as well as add greatly to the charms of a place.

There is one matter it is just as well to admit at once,—the Rhododendron cannot be made to do duty in the way of an ordinary bedding plant, it being contrary to its nature. Those who have tried it have added to their expense, and also to their disappointment at the same time, and we think it will prove quite as satisfactory to commence Rhododendron culture in an intelligent manner.

For hardy varieties to commence with we would name Roseum grandiflorum, Purpureum grandiflorum, Everestianum, Bicolor, Album elegans, and Lady Armstrong. For almost hardy, Lee's purple, Blandyanum, Atrosanguinium, &c. The third class, which, although hardy in England, is not so here, consists of many beautiful high-colored sorts, amongst which we mention John Waterer, Concessum, Sir Robert Peel, to which have lately been added some most excellent sorts, white generally, and very fragrant, including Lady Skelmersdale, Countess of Sefton Countess of Derby, Duchess of Sutherland, and Lady Jane Shawe.

(On page 214, June No. *Farmer*, first word on fourth line from end of article,—sown should be *some.*) The Rhododendron is not easy to raise, even by those who understand the way to do it, and nothing but disappointment can ensue if those who know nothing of raising them attempt their propagation. The price at which they may now be obtained is hardly up to the cost of production, and places them within the reach of all.

N. F. F.

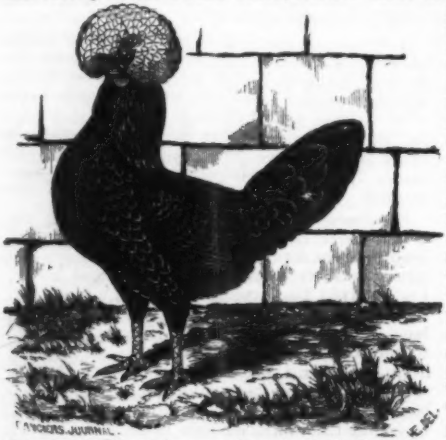
# Poultry Yard.

## Poultry Raising.

When so many find it difficult to make a mere sufficiency for life's support, it seems unaccountable that the pleasant and profitable business of poultry raising should be seldom or never resorted to for the purpose of gaining a livelihood and establishing a paying and permanent business, while an eager, struggling crowd are jostling each other in every other avenue of industry, no matter how difficult or how meager and uncertain the remuneration promised. Poultry raising for profit is a light employment, requiring no particular adaptability, and but a modicum of real work, with, of course, that regular and ceaseless attention which must be given to any business to ensure success, and it is a paying investment from the day of commencement. The one secret of success is thoroughness. The chickens must be well and regularly fed with a variety of good food and fresh water. The coops must be kept clean and well ventilated, and the chicks must have more or less room in which to exercise, and, to reap the fullest measure of success, must have comfortable, sheltered and sunny winter quarters.—*Ex.*

## White-Crested Black Polands.

The decidedly striking contrast between the color of the crest and the rest of the plumage of this variety of the Polish breed, renders them decidedly attractive and beautiful. I know of no prettier sight with poultry, than to behold a nice flock of these fowls parading their truly royal appearance when scattered over a neat lawn-mowed green sward. This excellent cut, which is from the *Fancier's Journal*, so well portrays their appearance that an extended description is rendered unnecessary. The plumage is black, of a beautiful iridescent character; the crest pure white, with exception of a few black feathers in front. The crest should be large and globular in shape. Legs slaty blue. Carriage upright and fine. Mr. E. Hewitt, now one of the most eminent poultry judges in England, and a few years since the most extensive breeder of Polish, writes of them, in an English paper: "Among the great variety of breeds of domesticated poultry, none perhaps are so universally admired as the Black Polands. The greatest number of eggs I myself ever knew laid by a single fowl, in one season, occurred in a hen of this breed. The eggs are of a very palatable character.—Though not large, they are a good-flavored plump fowl on the table." They are generally non-setters, yet I have known them to steal their nests, and "come in" with, and rear, a nice brood of chicks successfully. One of the most successful breeders of this variety in England at present is Mr. Thos. Norwood. We imported two settings of eggs from him last spring, and hatched twelve chicks, and had two dead in the shell. This is evidence that eggs will hatch when shipped over *three thousand* miles, and three weeks in transit. In this country there are some fanciers who are making a specialty of them. Dr. Enos of Michigan, and Mr. Sugden of Connecticut, are doing much towards perfecting this handsome variety. If we continue improving them as we have for the past five years, we shall soon be able to furnish England with specimens that will open John Bull's eyes with amazement.



G. O. Brown.

*Montvue Poultry Yards, Brooklandville, Md.*

## The Farmer's Fowls.

The popular impression that "in winter the farmer has an easy time," is soon dispelled by trying it once. There is no easy time for him if he would thoroughly prosecute his business, and summer and winter his hands are so full that ordinarily his poultry receive little attention. But one-half the care and labor required to earn fifty dollars tilling some crop, will produce that amount if bestowed upon his flock of fowls. If you propose to him to persistently neglect his best cow from one end of the year to the other, he will set you down as a candidate for a lunatic asylum, yet a common-sized flock of fowls, such as are kept at most farmsteads, will yield as much value yearly, if properly treated, as a first-rate cow.—*Poultry Nation.*

## Comparative Value of Breeds.

A writer in one of the poultry papers experimented with an equal number of fowls of the five varieties named below, with the result as given:

| | Cost. | Value of Eggs. | Value of Meat. | Total Value. | Profit. |
|---|---|---|---|---|---|
| Brahmas.... | $ 9.22 | $13.10 | $14.00 | $36.10 | $16.88 |
| Cochins..... | 10.15 | 11.82 | 14.60 | 26.42 | 16.27 |
| Dorking .... | 7.72 | 10.48 | 11.85 | 22.33 | 14.61 |
| Houdans.... | 5.35 | 15.26 | 9.15 | 24.41 | 19.06 |
| Leghorn .... | 7.03 | 16.10 | 7.30 | 23.40 | 16.37 |

Showing Houdans first, Brahmas second, Dorking last, while Cochins and Leghorns are nearly equal, and vary little from Brahmas. As the table given was supposed to be the result of actual trial, and will be widely read in your paper, and perhaps make the foundation for selection of a flock by some beginner, I deem this correction worth making. The birds all coming so near would tend to confirm an opinion I have heard expressed, that all the pure breeds are equal enough in profit to allow one to consult fancy only in a choice of varieties, even with limited room.

Rose Comb.

## The Pennsylvania Board of Agriculture.

Our neighbors to the northward seem to have done an exceptionally good thing upon organizing their new Board of Agriculture, in appointing so efficient a man, Mr. Thos. J. Edge, as its secretary.

Mr. Edge is an enlightened, active and successful farmer, who, besides the practical management of his farm of considerable extent in Chester county, has long been connected with the agricultural press, and is fully awake to the needs of the times. He will bring to his work a knowledge, efficiency and zeal, which cannot but be of the highest service to the farmers of the great State of Pennsylvania.

## The Maryland Agricultural College.

The Board of Trustees held its regular quarterly meeting at the College on the 6th ultimo. Of the trustees on the part of the stockholders, all were present except General Hardcastle; but none of the representatives of the State attended. The Hon. James T. Earle presided.

Captain Wm. H. Parker, President of the College, presented his report, which was read, accepted, and ordered to be printed in the Annual Catalogue.

Mr. Wm. B. Sands offered a preamble and several resolutions, which, having received a *pro forma* second, he pressed at some length upon the Board, when, on motion, they were laid upon the table.

On the nomination of the President of the College, who had been authorized to select a Farm Manager, Mr. Columbus J. Shipley, of Baltimore county, was appointed to that position.

A committee on the Annual Catalogue was appointed, and performed its duty in a formal manner.

No other business was transacted.

The following is the preamble and resolutions submitted by Mr. Sands:

The stockholders in the Maryland Agricultural College Corporation, having requested by an unanimous vote at their late annual meeting in April that this Board of Trustees, elected the same day, shall "make instruction in practical and experimental agriculture the leading feature in the educational system at the earliest possible moment," in order that the organization of the College may be so remodeled as to enable it to carry into effect the policy marked out—

*Resolved*, 1. The object of this institution shall hereafter be to impart that education to the future farmers of the State which will best fit them for the intelligent and successful practice of their profession; and whilst not neglecting those branches which qualify them for their duties as citizens and enable them to give effective expression to their knowledge and opinions, the main direction and intent of the instruction afforded shall be to give them an understanding of the forces of Nature with which agriculturists have to deal—giving prominence to the practical application of the knowledge gained and to experiments illustrating the bearing and scope of the principles involved.

2. Until further ordered its Faculty of Instruction shall be composed as follows: 1. A professor of Scientific and Practical Agriculture. 2. A professor of Chemistry. 3. A professor of Mathematics. 4. A professor of English Literature, &c.

3. The professor of Agriculture shall also be Superintendent of the farm, on which he shall practically elucidate the topics theoretically discussed in the lecture-room; he shall likewise be charged, in conjunction with the professor of chemistry, with the institution and prosecution of such series of experiments in the various branches of agriculture as may be suitable for determining disputed questions of practice; the establishment of principles; and the illustration of the studies of the class-room.

4. The professor of Chemistry, besides giving instruction in that science and such other branches as may be assigned to him, shall supervise, in concert with the professor of Agriculture, the Experimental work, and make examinations and determinations of such products, materials, &c., as are afforded by or used upon the farm, the experiment plots, &c.

5. Besides the regular faculty there shall be an Instructor in Practical Horticulture, who shall also teach Elementary Botany and Economic Entomology, and have charge of the College gardens.

6. There shall be secured the services of competent educated and practiced Lecturer on Veterinary Art to give didactic and clinical instruction in that branch during each winter.

7. That there may be established and maintained a curriculum most suited to the needs of those desiring to qualify themselves for the actual practice of agriculture, and to avoid the necessity of the duplication of instructors, all pupils will be required to adhere to the course laid down, and the reception of students for special instruction is prohibited.

8. The original feature of the College is directed to be restored, which required of each pupil daily labor in the fields, the gardens, or the shops, that the lessons of the lecture-room may be put into practice, the taste for and habit of such labor fostered and strengthened, as well as bodily health preserved by useful exercise.

9. All military organization, government, uniform, &c., is abolished, except such instruction in tactics as may be necessary to satisfy the conditions of the U. S. law, and that instruction shall from time to time be provided.

10. That the Trustees may be free to make necessary changes to carry out the foregoing resolutions, the present officers and professors of the College are requested to place their resignations at the disposal of the Board.

11. That a Committee of three be appointed to select and recommend to the Board, at a special meeting to be held July —, suitable persons for appointment as professors, instructors and officers of the College, and to submit any suggestions touching the same, their duties, &c., in view of the changes proposed, that may be profitably acted upon before the appointments are made.

*Resolved*, That to the office of President of the College an annual salary be attached of $700, and that said office shall be filled by such professor as may be selected by the Board; that the professor of Agriculture shall receive an annual salary of $2,000 and a house; the professor of Chemistry $1,500 and his board; the professor of Mathematics $1,500 and a house; the professor of English Literature, &c., $800 and his board. That the Instructor in Horticulture be paid $——; that $—— be appropriated for the compensation of a Veterinary lecturer and demonstrator; and that the professor of agriculture be authorized to employ, as may be required, one or two foremen on the farm, whose wages shall not exceed $—— each a year.

## Our Agricultural College.

**[An Open Letter to an Absent Trustee.]**

OFFICE OF THE AMERICAN FARMER,
*Baltimore, June 25th*, 1877.

GENL. E. L. F. HARDCASTLE,
*Easton, Maryland.*

*Dear Sir*:—As you alone, of the stockholders' trustees, were absent from the late meeting of the Agricultural College Board—much to my regret and that of your other colleagues—I venture to ask in this way your attention to the resolutions then offered by me and promptly tabled, and which you will find on page —— of this number of the *Farmer*.

In preparing them I was hopeful, from my knowledge of you as an enlightened and successful farmer of practical views, and devoted to the agricultural cause, that they would, in the main, receive not only your approval and support, but that of a sufficient number of the other members of the Board, to secure their adoption, even at the expense of some modifications to which I would have consented, to secure the principal end in view.

My reasons for urging these resolutions were heard, at the cost, as I fear, of much patience, but with equal courtesy and consideration. It was, indeed, only by the exercise of the urbanity for which the distinguished and venerable chairman of the day, Col. Earle, has always been conspicuous, that I was enabled to press them at all, he assuming a *pro forma* second that I might, according to the usage of deliberative bodies, address the Board in their advocacy.

Various objections were made. One gentleman was indeed good enough to say that my views, as formulated in the resolutions, except that they were untimely, merited adoption, and that they deserved to be placed on the record of the Board for continual reference, that they might be gradually worked up to. Another, after a complimentary expression,—inspired perhaps by a disposition to complaisance towards so new a member of the Board,—indicated his belief that they would violate expressed conditions of the charter. A third intimated they would have the effect to alienate instead of conciliating the farmers; and a fourth said they would "revolutionize" the College.

I frankly own that revolution *was* their purpose, and as frankly that, in my belief, unless the College is revolutionized in its aims and methods, there is no reason whatever for it longer to exist at all.

Besides, it was certainly tacitly, if not expressly agreed, at the meeting of the stockholders in April, and before the election was held, that a radical change was to be made. The unanimous instructions of the stockholders coincided. The gentlemen who controlled the result, and by whose votes the present Board was continued, certainly acted upon the strength of the understanding and the pledge—was that pledge unauthorized?—that practical agriculture was henceforth to be made the head and front of the system of education. It was antipodal to their intention to perpetuate the past history of the institution.

It would be proper for me to say here that it is far from my design to impeach in the slightest the motives of the members of the Board, or to derogate from the character of the present officers of the college. The question at issue is one of policy. All agree that such a policy ought to be settled upon that will secure to this professed agricultural institution the confidence and the support of the agriculturists of our State. Each has his own views. I have most decided ones of my own, and I can only regret that when the opportunity offered I could not press them with more eloquence, ability and effect; but such as they are, they can have no advocate more earnest and devoted.

### A Revolution Essential.

I say the college, as now organized and managed, requires a revolution before it can occupy the place it ought in our State.

In her system of education there is no need and no room for an institution which shall only be a reproduction of others already too numerous, which are liberally enough supported from her treasury and not too well patronized by her people. This one has not been content with the position its charter gives it, but has infringed as well upon the privileges as upon the constituency of the other colleges of the State, even going so far as to bestow with a liberal hand scholastic degrees, for which it would be difficult to find any authority of law,—an authority which certainly would have been expressly conveyed if it was ever intended to place this on a similar footing to our schools of literature.

The income it receives will never enable it to rank higher than other fourth or fifth-rate colleges, and the addition of some nominal agricultural features does not give it any distinctive character. It can only hope for some local support, and for some patronage from the birds of passage who occasionally alight in Washington; with other contributions to its maintenance from that anomalous class specially invited,—the youths seeking drill in those elementary branches constituting the subjects of examination for entrance to the United States Military and Naval Academies.

It may be able to exist upon these; it may even attain a certain degree of financial prosperity; but it must then ever combat the opposition of the farmers of the State, who unceasingly demand that the moneys appropriated by the State—on her own behalf and as the agent of the United States—shall be expended in maintaining a school, of which agriculture shall be the basis: a school like those of Michigan and Kansas, and that later one, in which our nearest sister, Virginia, has such just cause of pride.

### Its True Place.

The only position for this College to occupy—if not a technical school of agriculture—is that of a high-grade farmers' school, where the young men of our State, destined to inherit her lands and to become her farmers, may receive that kind of an education which best fits them to successfully carry on their business, while it qualifies them for the duties of citizens. In other words, it should give them what is useful instead of specious—that which tends to prepare them for the kind of work they expect to do.

This was the very marrow of the object of the founders. They, at the start, contemplated as its work the training of accomplished and successful farmers. It was not meant to be an institution on the regulation pattern, with a fancy dash of agriculture added. That, in its career, *this* has been sometimes added and sometimes omitted, is not due to any lack of prevision in the originators. They meant to give the farmer what best qualified him for the place he had to fill in the social fabric.

What that *best* is must vary from time to time. The social and financial condition of our farmers now differs greatly from what it was twenty years ago. Then they were our most leisurely class, with opportunities, time and taste for cultivating literature, the liberal arts, and for acquiring that rounded outline to their education which becomes the man of pecuniary means and mental culture. This is now all changed. However some may deplore it, our land is being divided and sub-divided. It is the day of small farms. Our farmers, too often now, must literally earn their bread by the sweat of their brow.—We must then adapt the institution to the state of things that exists—to the average needs—and not seek to prepare for some ideal condition that may never arrive.

**The Objects of its Establishment.**

The favorable conditions of the college charter were accorded, because the State had neglected to foster the pursuits of agriculture; its express function was to fit the youth of the State to "subdue the earth." Later, the law of the United States, quoted and adopted by the Legislature of Maryland, as clearly provided that the benefits to accrue from its generous grant of the public lands, are to go to promote the liberal and practical education of *the industrial classes*, the leading object of that education being, "without excluding" [that is permitting, as, and when, deemed advisable,] other scientific and classical studies, and, including military tactics, to TEACH SUCH BRANCHES AS ARE RELATED TO AGRICULTURE AND THE MECHANIC ARTS.

This law was enacted by Congress in a time of war, when it was thought proper to encourage a citizen soldiery, and except that the leading object shall be to teach branches bearing on agriculture and the mechanic arts, (the practice of agriculture including that of many of the mechanic arts,) nothing else is *mandatory*, except tactics, and all else is *permissive*.

So far as has come within my knowledge all the institutions which have sought to combine the ordinary scholastic routine with agriculture as an addition, have been signally unsuccessful. Those taking the ground which I hope to see this one occupy, are all eminently useful, successful and popular.

**Its Present Condition.**

At our Maryland College to-day, as I think you will agree with me, there is not one single visible indication of its being an agricultural school.

Any visitor, on the contrary, may see at a glance that it is a military school. That character is written all over it. The flag-staff and the parade-ground, without; the sentry with musket on shoulder on guard in the hall, the gun-racks, the arms themselves, the accoutrements and uniforms within; all show, too, what is the leading feature. Its vocabulary, too, is military. There are no pupils or students,—they are all "cadets." The class-rooms are "section-rooms;" the refectory is a "mess-hall." Military discipline is strictly enforced, and there are "occasional lectures on the composition and organization of armies!"

But an inspection will show no experimental plots—no collection of our indigenous vegetable growths—no beds of grains, grasses and forage plants—no students' gardens—no greenhouse—no lawn with appropriate ornamental trees and shrubs correctly labeled—no flower garden as large or attractive as that of many a rural cottage—no nursery—no fruit garden with names conspicuously attached to the various sorts for illustration and instruction—no sections of the soils of the State—no museum of her products—no collection of models of implements—no specimens of her corn, wheat, tobacco and wool, or of her chief manufactures. To these deficiencies we might add that there are apparent no workshops—no model pens for pigs—no barns for sheep. The cattle, we are told, are grades that ought to be got rid of; the only ram has been killed and not replaced; the pigs and poultry and bees, if they exist at all, are somewhere in the background. Everything, in short, is in the background that would seem to bear upon or even lean towards agricultural pursuits.

If it is said that all these things which are lacking cost money, it may be replied that some of them cost little more than the trouble of collecting or preparing; and even if all cost money, a pertinent inquiry would be how an agricultural school can have existed at all without them.

The farm is said to be much improved over what it was a year or two ago, but it is far from constituting that Model which would satisfy an enterprising farmer of Frederick or Montgomery, of Talbot or Cecil. It must be said, however, that the term "Model farm" is so modified by the qualifying phrases as to make it apparent that the true intention was that the site of the college should be an *Experimental* farm, and the charter calls for systematic experiments, which shall not only be recorded but regularly published.

**What It Should Teach.**

To pass from considering what the College is and is not, let us see what it should and can be made, and what existing features should be obliterated. At this point, I beg to say that I think I represent the views of the farmers of the State. I do not mean that I am delegated to speak for them, but that, deeply interested in the College, one of the first pupils to enter its doors the first day it was opened, the first to be graduated from it, having had it under view during its whole existence, I have talked with farmers from almost every part of the State concerning it, and I believe I have a correct notion of the manner of institution that would meet their wishes.—And I hold that, as what is done for it *is done in their name*, they are the only class at all concerned.

It should not undertake the teaching to children of tender years of elementary branches. It should only admit youths who have an acquaint-

ance with the branches taught at the country grammar schools. The courses should be such as would fit the young farmer for the duties awaiting him on his farm, and which would not require him to devote from two to four years more to learn either the principles or the practice of his profession.

He should have a sound and liberal English education.

In mathematics the teaching should be thoroughly practical, based on a knowledge of the theories involved. Constant practice should make him competent to survey and plot his own fields, level drains, measure timber and stone, &c. Sufficient knowledge of engineering should be acquired that he may calculate the strain on and resistance of farm buildings, bridges, &c., and become conversant with road-making, the adaptation of materials, &c. Of course he should be accustomed to keeping accounts.

The higher mathematics, ordinarily pursued as mental gymnastics, may safely be left out of the farmer's course.

A general knowledge of physics and of elementary geology and mineralogy is desirable, and a far more thorough acquaintance with chemistry, especially in its applications to agriculture, going so far as the acquiring of the technical skill to determine the ingredients, useful, inert or hurtful, in fertilizers, artificial or natural; the composition of plants, &c. The dependence of agriculture upon the investigations of chemistry is so close that this science is above all others necessary for the agriculturist to understand.

Then the application of the sciences to the practice of the art of agriculture,—the understanding of the formation of soils (geology and mineralogy); the preparation and fertilization of the soil (tillage, rotation, producing, composting, saving and applying manures, uses of tools, &c.;) the æration of the land and the elimination of superfluous moisture; (the principles and practice of drainage;) the germination and growth of seeds and plants (vegetable physiology); the cultivation, harvesting and preservation of crops, &c. Besides these the breeding and fattening of stock—the adaptation to different uses of the various breeds; the composition of foods, &c., should all be understood.

In addition to an acquaintance with structural botany, which is implied, the intending farmer should know enough of systemic to be fairly started on his way, should he desire to pursue it further as a study or a recreation; he should know enough of entomology to prevent indiscriminate destruction of friends with foes in the insect world, and be acquainted with the best methods of treating both.

It is desirable, on every account, that the manual operations of the farm should be practiced, not only as exercise but as illustration. An acquaintance with those of the garden, the orchard and the nursery—as interesting and as useful, but less commonly understood—should also be acquired, as budding, grafting, pruning, propagating, &c.

The domestic animals, their care, breeding, management, &c., constitute so large a part of the farmer's work that it is of great consequence for him to know something of comparative anatomy and receive some reliable instruction in veterinary art. Nowhere is knowledge and skill so much needed. No such amount of property is anywhere else left so entirely unprotected and at the mercy of ignorance and empiricism. Each year animals of many millions' value die from disease in the United States, almost without an effort to save them or to fix the cause. In our rural districts, in many of our cities, practitioners with correct ideas of the diseases of live stock and their proper treatment are entirely wanting. This might be largely remedied by even elementary instruction of a few young men in every neighborhood. And this instruction our College ought to and readily can give. It has no more promising, humane, or noble field of usefulness.

Such a preparation for the business of the farm, given by capable and zealous instructors, with such additions and modifications as time and experience suggest, would practically qualify our young farmers for their future occupation. And, while fitting them for that, it would by no means unfit them for anything else, should circumstances or inclination divert them to other pursuits. It would have the advantage over the regular course afforded by our routine colleges that the mind and the muscles would alike be trained; and that, for one of the arts of life, young men going out from it would be thoroughly qualified.

### What the Instructors should be.

Such a course might be carried out by a faculty small in numbers, if effective in work, as follows:

A professor of agriculture, who should teach in the class-room by text-book and lecture, and with tools in the field. He should also be Superintendent of the Farm, that his theories may agree with his practice, and his practice illustrate his theories. He should have one or two foremen (say one for the ordinary farm operations and one for the care of the live stock) to carry out details of management. The direction of the experimental plots comes properly within his duty, aided and advised by the professor of chemistry, and these should be prominent features, as indeed the organic law requires.

This chair should rank above all others, and its incumbent should receive the highest salary paid to any professor. No second or third-rate man should fill it. Its occupant should be a man whom success commends—one who makes or has made a living from his farm; certainly not one whose farm has failed to yield him a maintenance; and far less, one who has been unable to wring a support from the practice of some "profession." It would be preferable that he should be a Maryland farmer, well educated originally, and posted to the day in the progress Science is making; by choice a man young enough to have the prospect of an useful career still before him, and with that enthusiasm as to the possibilities of the farmer's calling, and a love for its duties, which some of the young farmers of our dear old State still nurture.

It will not do to say that such men cannot be had. Let it be understood that the College is at last to take this departure; that this chair is to be upheld as the one most important, most responsible and most distinctive of all, (as it should be) and men may be found in Maryland who would, from patriotic motives, make some

sacrifices to take it, and whose very name and presence would be a guarantee of that support and confidence from the farming class, which our colleagues and the President of the College cannot bring themselves to believe will ever come to a farmers' school.

The professor of Chemistry could readily teach so much of physics, geology and mineralogy, as may be included in the course. His obvious duties are, besides instruction, the supervision of the experimental grounds, the examination of products and materials, &c. This office is hardly second in importance to the one first named; but it is proper to admit at the outset that it is impossible to obtain for it a first-class man. But it would be entirely practicable to get from among the assistants of some of the great chemists of Germany—from one of its renowned agricultural colleges or experiment stations—a young man of promise, trained for and experienced in the very work to be performed here. These young men are thoroughly taught—many of them are English-speaking—they are enthusiastic in their profession, and, as I am advised by gentlemen who are so situated as to know, would, in many cases, be glad to find such openings for development as this might offer here. Such a young man might do for us what Goessman (one of this very class, as I believe) has done for Massachusetts, where, it is authoritatively said, his reports on the commercial fertilizers has saved more to the State than the cost, during its entire existence, of her agricultural college—what the elder Kedzie has done for Michigan and the younger is doing for Kansas—what, in a related field, Atwater and his young German aids are accomplishing with so much satisfaction and profit for Connecticut.

The professors of Mathematics and the English branches are more readily obtained, the right material being more abundant. The former should not only be able, but willing to do, and even fond of field-work, that the facility coming from constant practice might be acquired by all the pupils.

An instructor in Horticulture, skilled in the production of fruits, vegetables and flowers, able to convey the knowledge of his processes to learners, and also competent to instruct in the other branches named, would not be difficult to obtain, and I judge, from my own experience, that the proper man would soon prove himself one of the most serviceable and popular instructors on the farm.

Probably some difficulty may be experienced in obtaining the services of a suitable Veterinary Lecturer, since, in this country, the number of such is limited; but I am confident an arrangement might be made to have such instruction during six or eight weeks of every winter. By the help and advice of such a teacher, a very instructive museum of specimens of comparative anatomy and pathology could be formed. As far back as 1861 such a collection was begun by Prof. Johns, who was an enthusiast in this direction; but no remains of it seem to exist now.

### No Special Courses or Students.

Such being the working force, necessity would compel a homogeniety of classes, and would prevent at first the privilege of elective studies. Later, as the pupils and income increased, it might be wise to expand in that line. Far be it from my wish to limit in any direction the education of farmers. But at present there is too little time and opportunity at command for the acquiring of fundamental instruction, far less the higher education. On this account the faculty should carefully prepare a curriculum suited to the average student, and require all to adhere to it. Especially should none be exempted from pursuing the agricultural branches. If this is a school *sui generis*, distinctively agricultural, (and I cannot admit, however it may have departed from this attitude, that it can legally or theoretically occupy any other,) then every student who comes ought to be expected to fall in with the regular routine. Of course, none of the youth of the State can be refused admittance; but if those who propose to enter the learned professions, the army or the navy, seek to come here, they should at least understand clearly, in advance, that what is taught is implied in the term *Agricultural*. This rule obtains in Michigan and Kansas, in Virginia and Massachusetts, and is founded in reason.

### Boys for West Point and Annapolis.

But success can never be expected in such a school so long as the preparation of candidates for West Point and Annapolis is a part of its work. The mingling of young men expecting to embrace such widely-opposed professions cannot but be detrimental to one or the other class. One will be looked upon as a preferred rank. *Which*, cannot be a matter of doubt. The effect on the *morale*, on discipline, must be apparent. If now it is not, then the cause is to be looked for in the limited number of the present pupils who expect to go on the farm.

Two years ago I saw the present President, then a professor, leave the college, ten days or so before its term closed, for Annapolis, accompanied by so many of the pupils that they outnumbered, I think, those who remained. Can any one believe that such a step tended to the maintenance of discipline, or to preserve that quiet and content the first necessity to successful study? Yet the same thing is still permitted this special class.

My firmly-fixed belief is that this feature and the present military system operate as much against the college, with the farmers of the State, as the subordination heretofore of practical agriculture, and that it is hopeless to expect their confidence until it is abandoned. They see in the combination an incongruity which cannot be explained away.

I believe few farmers—as they, indeed, have no right—would find any fault with the minimum of instruction in military tactics necessary to meet the requirements of the U. S. law. They admit that the habits of discipline and order, of personal neatness, of economy of time, of prompt obedience to authority (itself a qualification to secure obedience from others) are often acquired by military discipline. There might be an organized company drilled from time to time; and this would satisfy the letter and aims of the law. Beyond this all else is superfluous for a farm school. Officers-in-charge, officers of the day, commandants of cadets, section-leaders and

orderlies, are well enough for avowed *military* schools, but they are out of place in the corn field, in the chemical laboratory, or the wheelwright shop.

**Labor by the Students.**

The original proposition that daily labor should be performed by every student, came, I believe, from the first president of the College, Benjamin Hallowell, and was warmly seconded by the first president of the Board, Charles B. Calvert,—two names to which I, as every Marylander may, bow with unfeigned respect: the one all that was sage and good and gentle; the other all that was manly and noble. And both these men thought it not unbecoming their positions—with an enthusiasm of which I would we had more at this day—to illustrate with their own hands how various processes in the field and garden were properly to be performed.

The early students at the College were many of them of comparatively mature years, and entirely from the slaveholding States, not owning or expecting to acquire landed estates alone, but abundant labor. A letter from Mr. Hallowell, which I have before me, says his sojourn at the College though short, inspired him "with high respect for the amount of intellectual talent and moral worth with which the first session of the College opened." It was, perhaps, not surprising, therefore, that at first "enforced labor," as some like to style it, was unpopular; but this was soon overcome, and the young men went to work willingly and zealously, though often but too conscious that it was work both ill-directed and profitless as illustration. They would soon show equal zest in it now, if properly directed.

The tenth resolution, asking the offer of the resignations of the present officers, would not necessarily have operated to displace any, save those whose chairs were abolished. The proposed committee, had the resolutions passed, would naturally, as I assume, have first weighed the qualifications and fitness of the present incumbents. Of these it would be unbecoming for me to speak here, even if I had fuller knowlege than I possess.

**Salaries of Teachers.**

The resolution proposing the salaries of the various professors was tentative, and was open to amendment. The figures were such as I believe would secure competent men. They were no higher than competent men would earn, and others than competent ones would here be out of place and dear, however cheaply they hold their services. There are two dwellings on the farm,—one a neat cottage, the other the commodious and substantial Rossburg house.

By affixing a separate salary to the president's office, that officer, as is proper, would be compensated for the performance of the administrative duties separate from those of his professor's chair. Although desirable on some accounts that the professor of agriculture should be at the head of the college, by making him superintendent of the farm, his time would be so occupied that it would be scarcely practicable. Nor would it be essential, so long as the executive is in full sympathy with what I contend is the first object of the college.

**Salaries Now Paid and as Proposed.**

It will not be amiss to compare the salaries proposed to those now paid.

It was proposed to give the professor of agriculture $2,000 and the large and pleasant Rossburg house, which, though now in bad repair, could be made comfortable as of old. That professor now gets but $600, though he receives $200 for extra services as registrar. I think a suitable man for professor of chemistry would well earn $1,500 and his board.

The present incumbent gets $600.

The salary of the chair of English was left as at present, viz: $800.

The suggested salary of the professor of mathematics was put at $1,500. This not because I believe an efficient teacher could not be had for much less, but to be open, because I assumed that Captain Parker (whom, when I drew the resolution, I supposed was professor of mathematics) would be retained in that chair and in the presidency from the skill in administration he is generally credited with possessing.

I found, when the board met, that he is professor of civil engineering. His salary is $1,800 a year, with a commission of $10 a month for each special student, provided his salary shall not thereby be made to exceed $3,000. Besides this he is furnished with a house, gas, washing and all the vegetables and products of the farm necessary for his own use. Suppose we call this $3,600, excluding the house.

Now, the professor of mathematics gets $800; there is an assistant professor of mathematics who receives $480, and a professor of languages at $600. All the professors are now allowed their board, washing, lights and fuel. A chair of Physics and Applied Mathematics is now vacant, but probably may be filled by the president at pleasure.

**What Share Goes to Agriculture?**

Putting this last salary also at $800, the total salaries now paid aggregate, say $8,480, of which are to be charged to agriculture, the professor of agriculture $600, professor of chemistry $600—total, $1,200, about *one-seventh* of the whole!

In the plan submitted by me, putting the cost of veterinary instruction at $500, and that in practical horticulture at $750, and the total would be $7,950, of which $4,750, or nearly *three-fifths* of the whole, would be chargeable to agricultural branches, as would seem but proper in an agricultural school.

These figures seem to justify the comparison made by Mr. Chas. B. Calvert, a late member of the Board, at the stockholders' meeting, where he said "the mathematics taught cost about $5,000 a year; agriculture only $600; and that very important branch of science, chemistry, far more important than mathematics to the farmer, also costs only $600."

The sum of the readjusted salaries would have left of the total of the State and United States donations (over $13,000 a year) an ample amount for the pay of lecturers, the purchase of materials, and the prosecution of experiments—thus avoiding any risk whatever in altering the present plan of conducting the college.

**Grounds of Opposition.**

The opposition to my programme of change was mainly on the ground that the farmers themselves—even if it were transformed to a school especially designed for practical agricultural education—would not give it their support; that, when they wanted their sons educated at all, they wanted them to have "book learning" like the sons of other classes, but that, as a rule, they did not care about any higher education than that afforded by the country schools. This, so far as any expression of opinion was made, seemed the concurring views of the gentlemen present.

I took issue with every point. It may be that, from my occupation as the conductor of an agricultural journal long fortunate in being favored by the confidence and support of the farmers of Maryland, that I come mostly in contact with the intelligent, the reading and thinking portion of that class.

I can say of them that, as a rule, they are all anxious for the education of their sons, and especially desirous that they should obtain a familiarity with those sciences which underlie the practice of their art. Unfortunately, their observation, and too often their experience, has shown that the only higher education generally available, instead of qualifying, rather disqualifies their sons for work on the farm. Four years of ordinary college life, separated from farm interests and especially from farm work, brings the young man home dissatisfied with both, though not particularly well-prepared for anything else. Rather than risk this result, many farmers, I acknowledge, content themselves—but not of choice—with the education the country schools afford their sons.

This ought not to be, and would not be if our college was placed on the right basis. It may be arrogance, but I claim my rejected resolutions offered that basis.

The right men in charge, its work fairly developed, and we should not have wanted for pupils, eager to avail of the advantages offered. Perhaps not the first year, because there has been no lack of promises; but, as it was demonstrated that the long-wished-for change had come, that the name 'agricultural" signified the thing, and the young men of Maryland would flock to our school, as the young men of our neighbor State are flocking, *in crowds too great to be accommodated*, to the Agricultural and Mechanical College at Blacksburg.

It is not a flattering estimate of the intelligence of the farmers of Maryland to assume that they are behind their fellows of Massachusetts and Michigan, of Virginia and Georgia, in their desire for illumination from the light which Science is now shedding on their path.

**What the Future of the College Might Be.**

It may be thought that I am sanguine as to our State institution. I confess it. But I am not so full of enthusiasm as to lose sight of what is practical and practicable. I hold it should not only be made the place for the thorough training of our prospective farmers, but that it should likewise be the agricultural centre of our State. I am sure that is what it could be made, were all concerned to work together to accomplish it, with zeal and in full sympathy.

I avow my faith in the practicability of building here a structure which would soon become a pride and a glory to our people; and for myself I covet no higher distinction than to be able to say that I helped in the patriotic work of erecting an institution to which the generations of farmers to come will be indebted for that training, that stimulus, that example, which will not only prosper them individually, but qualify them to advance and bless our State.

**Lectures and Meetings.**

During the winter season lectures should be delivered by the members of the faculty and others on subjects connected with agriculture; and these lectures should not only be thrown open to the public, but provision should be made near by that such farmers can be accommodated as chose to remain to attend any course which might extend over several days. These might gradually assume the character of the agricultural institutes now held in the New England and Western States. For instance, the course of practical lectures on veterinary surgery would scarcely fail to bring a number of interested and intelligent listeners. The professor of chemistry might effectively discuss in a popular style the subject of fertilizers, their composition and value. Some gentleman of ability in the legal profession might treat of some of the ever-recurring questions of rural law.

Prominent farmers of the State might be persuaded to talk on their specialties, and practically illustrate various processes to the assembled faculty, pupils and visitors. Questions could be propounded and discussed, views exchanged, and mutual acquaintance and confidence established between the college and the best men of all parts of Maryland.

**Experiments.**

The experiments here, if not to be looked to as authoritative settlements of vexed questions, ought at least to be full of interest and instruction to farmers. The determination of the character of these experiments should be deliberately arrived at. Much so-called experimental work is crude and valueless. My own view is that they, as a rule, but not exclusively, should rather illustrate practices in the art of agriculture. The tests of the effects of varying *brands* of commercial manures is no part of the proper work, and is liable to lead to errors. The application of different *groups* of such fertilizers is more to the point. As an illustration of one kind of trials which might prove of direct and early benefit, I will name the preservation of green corn-fodder in trenches (*ensilage.*) Many farmers in our state are total unbelievers in its possibility. In the face, too, of its wide practice in Europe, and also of the undoubted success on a large scale of an intelligent citizen of Maryland, who has published his experience and announced his intention of enlarging his operations in that direction the coming season.

The essay ought to be made on the college-farm in such a way that it would dispose of all

doubts, and announcements in advance should be made of the dates when the *silos* or trenches would be opened, that farmers and others interested might be present to see for themselves. The press of the State would spread the information, and the result would be in the mouths of the farmers for weeks—thereby drawing public attention to the College. Other equally interesting tests might readily be suggested.

**Improved Stock—Workshops—Museums.**

Representatives of improved live stock suited to our latitude, should have a conspicuous place on the farm. The money needed to secure them is too trifling to be mentioned. It is probable the breeders of our State, if properly addressed, would willingly supply many kinds at nominal prices, or as gratuities, if they could be assured that they would receive proper care.

Equally important are workshops, equipped with the tools and materials,—say of the carpenter, the wheelwright, the blacksmith and the painter. The practical farmer *must* be a jack of-all-trades, and a dexterity may be given him by a little timely instruction in the use of tools, which will be of never-ending benefit to him. Besides that, this feature seems as obligatory by the terms of the law as military tactics, on which so great stress is laid.

Museums of the products of our State, exemplifying her flora and fauna; specimens of our marls and limestones, our native metals and woods might speedily and readily be formed, and would constitute useful illustrations of the resources of the State.

**The Proposed Experiment Station.**

Here, too, might be placed with propriety, if there was no antagonism of purposes, the Agricultural Experiment Station, which so many of us are hopefully looking to see established by the next Legislature. I mean, if the College were to hereafter be so conducted that improved agriculture shall be its base as well as its aim, then there would be manifest fitness in establishing in contiguity to it, or upon its lands, the proposed new institution. If, however, it is to remain that abnormal hybrid—"a literary kite with an agricultural tail"—then the farther apart the two are separated the wiser and more prudent it will be.

**President Parker's Report.**

In President Parker's report—ordered printed by the Board—some views are expressed in which I entirely concur, whilst taking issue with him as to others. But his plan, as an entirety, will utterly fail to remove the reproach which rests against the College for its neglect to perform useful or needed work; or to merit a continuance of the liberal support the State gives it. It comes equally short of carrying into effect the declared wish of the stockholders, who, for the first time that I can recall, intervened to mark out a line of policy—unanimously expressing their desire that "instruction in practical and experimental agriculture shall be made the leading feature in the educational system at the earliest possible moment."

I stick to that text. The farmers of the State will stick to it. It is so plain and so clear that ingenious twisting cannot obscure or change its meaning. Carried into practice, it will make the College one of the most effective instruments in the amelioration of our agriculture, and open it to a future of usefulness and honor.

**This an Auspicious Time for Change.**

To the plea that the time is not propitious, I reply that none could be more so. There is no junior class. The others could not be much harmed by a change. To judge from the catalogue I do not think the farming class of Maryland has many representatives. One of the late professors gave publicity to the fact that in the last session of the college there were only *seven* boys from the agricultural community of Maryland. I see in the catalogue of this, names of young men from Minnesota, Massachusetts, Tennessee, Idaho—"Parthians, and Medes, and Elamites, and the dwellers in Mesopotamia."

It would be pleasant, indeed, to know that our College had acquired so enviable a reputation for the thoroughness and fitness of its course of agricultural instruction as to draw these young men from quarters so remote. But candor would compel the acknowledgement that agriculture was the last thing thought of by them.

**What it is Doing NOW for Agriculture.**

The Registrar of the College informs me, under date June 20th, in reply to an inquiry addressed to him, that there were then 52 pupils present, [this, I believe, is about or above the average] of whom *two* are receiving instruction in "Agricultural Chemistry;" *five* in "practical Agriculture," and *one* in "Scientific Agriculture and Civil Engineering as applied to roads and bridges." Whether the five include the other three, or whether Captain Parker, as professor of Civil Engineering (at a salary of $3,600) has any other classes than this one pupil, I do not know. But even assuming a total of eight pupils taking branches bearing on agriculture, then they cost the State of Maryland this year $1,650 apiece. In other words, the whole establishment is kept up, the ordinary pupils paying $200 a year and the special ones $450 a year, and the State contributing $13,200 a year, that these eight young men may be fitted to "subdue the earth," and taught "such branches of learning as are related to agriculture and the mechanic arts." It was for this the college was founded, endowed and nurtured. The other students are mere accidents. If it was not for the eight, there is no apology for the college being. Six thousand dollars ($6,000) would pay tuition fees of all the others—and 31 more, 75 in all—at that magnificent institution, the Johns Hopkins University.

Yet this is the system which exists, and which, in spite of the wishes of the stockholders, is to be continued.

Oh! Agriculture, what sins are committed in thy name!

**What it Might Do.**

The College is out of debt for the first time in its existence. Its yearly revenue of $13,000, aside from pupils' fees, is ample. It can now afford to abandon its long chase after its *ignis fatuus*, a long list of "registered" pupils. It is free at last to devote itself to agricultural education. Let it declare this to be its work, and by

the choice of proper hands to which to confide it, *deserve* the support it has long sought by tortuous devices.

If students do not come freely the first year, it will give more opportunity for developing and showing its distinctive line of operations, and they will the more surely come later. Those who doubt, do injustice to our farmers. And the firm establishing of such a place as I seek—perhaps ineffectively—to portray, will go farther towards securing exemption from apprehended interference by the Legislature than the slim attendance of students will invite it.

**Compensated Labor.**

Another feature which I was earnestly bent upon seeing established—had I found my views would weigh with the Board—was a system of remunerated extra labor whereby the poorest farmer's boy in the State, who was bright enough and ambitious enough, might secure all the educational advantages to be offered by the institution through work performed by him on the farm, or in the garden or shops.

Ours is not meant to be an exclusive institution, and opportunity should be given those who are willing and able to supply the deficiency of money by the labor of their hands, as is done with the happiest results at Amherst, Lansing, and Blacksburg.

**But one Road to Prosperity and Usefulness.**

I feel and speak in earnest in this matter. It is a cause in which, with what ability I can command, I am willing to spend and be spent. I believe the proposed plan is—perhaps with some modifications—the only one to secure permanent prosperity; to make an useful and popular institution. That of Capt. Parker, accepted and in effect endorsed by the Board, cannot so succeed. To carry it out will invite changes in the charter that will degrade the College to a mere manual labor school; or even farther—cause its entire revocation, and see the State appropriations turned over to an Experiment Station; and the United States fund applied to another institution, which does better work for the education of the industrial classes.

I hope this may be averted. My belief is that it can only be averted by preparing, in advance of the next session, for a total change in the aims of the College; by placing it at once on a plane where it will give no uncertain sign; by making agriculture, instead of a mere appendage, the be all and end-all of its scope; by rejecting the features which are so obnoxious to the farmers, as well as to such of the stockholders themselves as take any interest in its management or feel any hope in its future. The present plan can lead only to disaster. A college conducted as it is proposed to conduct this one fills no void. A vacancy, much felt, can be supplied by the institution changed as proposed.

**A Suggestion.**

Will I be taking too great a liberty if I suggest that what *I* failed to do, *you* may accomplish? Your adhesion to the views I inadequately endeavor to enforce, of the capabilities, the duties and the functions of the college, would have great weight with your colleagues. Your open and earnest espousal and maintenance of them—from the respect all have for your ability and judgment—might possibly result in their acceptance.

I respectfully invite you to make the essay. Its success in your or any hands would give me unbounded satisfaction. I cannot but believe that you must concede that I am right, not only in the abstract, but that "now is the accepted time" for such action as will redound to the great and permanent advantage of our agricultural interests.

Should we, then, after all is done, fail from lack of that support which we should deserve from the farmers of Maryland, no sin will lie at our door. But I believe there will be no failure, no reason for turning back. I have more faith in our farmers; and even should disaster come, we may console ourselves that *we* have done our duty, executed the trust confided to us, deserved well of the commonwealth!

With an expression of my great respect, I am, dear sir, Yours truly,

WM. B. SANDS.

## Agriculture in North Carolina.

By the courtesy of Col. L. L. Polk, the commissioner, we are in receipt of the circulars of the newly-established Department of Agriculture and its annexed Agricultural Experiment and Fertilizer Control Station.

Dr. Albert R. Ledoux has been appointed chemist, and is making examinations of the various brands of fertilizers sold in the State, the results of which are published in the circular of June 11th. In introducing the chemist's report, the commissioner says:

In many of the countries of Europe, and in some of the States of our own country, similar Analytical Stations are in operation, and wherever they have been established the universal and gratifying effect has been to elevate the standard of the intrinsic value of all fertilizers placed on the market; and so it will be here.

We have not space this month for the detailed report, but we give the valuation of the several ingredients by Dr. Ledoux, which differ somewhat from those of the chemist to the Pennsylvania Board, being generally higher:

| | | |
|---|---|---|
| Soluble Phosphoric Acid | 12½ | cts. per lb. |
| Insoluble " " | 4 | " " |
| Reverted " " | 9 | " " |
| Nitrogen | 22 | " " |
| Potash | 8 | " " |

## Crop Reports.

The Department of Agriculture, June 29th, reports oats in superior condition in New England, in most of the Southern States, in those of the Missouri valley and in Oregon, and in fair to high condition in all the remainder except California. The South is finding immunity from loss in their red rust proof oats. The indications are favorable for a good yield of barley, though a decrease of area is reported in the Western States. The condition is highest west of the Mississipi. There is an increase of clover, especially in the South, and very marked in Texas. Spring pasture has been abundant in northern New England, in the West, in Virginia and Texas and in Oregon.

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JULY 1, 1877.


## REMOVAL.

**The publication office of the AMERICAN FARMER has been removed, on account of improvements in its former quarters, to No. 128 W. Baltimore street, over the Bulletin office, and nearly opposite the American and Sun buildings. We shall here be pleased always to see our friends,—new and old.**

## The Pomological Meeting.

The Executive Committee of the Maryland Horticultural Society has nearly completed the arrangements for the reception of the American Pomological Society in September, and every pains will be taken to ensure a brilliant and successful display.

In our next issue we expect to be able to give full information as to the progress made in the preparations. In the meantime, we hope that in every quarter the friends and promoters of pomology will be awake to the importance of earnest work, that no part of our own State shall fall short of doing its full share in illustrating her magnificent capacity for fruit-growing.

## The Agricultural College.

We must apologize for the space the letter of our editor consumes in this number. The only excuse is that the present is the only time any remedy can be applied. His own views as to its proper position were well known, and his recent election to the Board was based on an understanding that agriculture was hereafter to be made its chief end. It will be seen that, instead of this, the old plan is to be continued. We hope all our Maryland readers will, notwithstanding its (too great) length, peruse his letter.

## The True Theory.

Captain McGinnis has for the present "turned off his lime-lights" and taken up another branch of his subject, of great importance, and which will commend itself to the attention of all.

## The Virginia Agricultural College.

This is a practical farmers' school, very much such a one as we should like to see made of ours in Maryland. To those who doubt the disposition on the part of our farmers to avail of such opportunities as might be here, as there, presented for the education of their sons, we commend the following from the *Southern Planter* for June, (our italics.)

As we announced in the May number that Prof. Buchanan would make the oration at the coming Commencement of the Agricultural and Mechanical College, (Blacksburg,) we now state, that Col. Robert Beverley is the man. Col. B.'s selection is a most happy circumstance, and we know the announcement will be read with pleasure throughout the State. The Colonel is at once a man of large success in his own operations and possessed of public spirit second to no man in Virginia; and what is more, is not afraid to speak his mind.

The *demand upon this College is already very much larger than its ability to meet; what it will be in a few years no one can tell.* It will need more buildings and more professors. We are in hopes there will be no trouble in supplying the first, and the graduates from the College itself will furnish the second. This will give new teachers of ability and devotion, and on a basis inexpensive beyond any other arrangement possible to be made. *The corps of professors there now is a pride to the State;* and the young men coming from their hands, as graduates, will not be less so. Then let these young men, or such of them as are most deserving, have a showing before any new people whatever, no matter where they come from, or what may be their backing.

*This school is full of promise to the Commonwealth,* and we hope the Commencement this year will witness such a crowd of influential men present, from all parts of the State, as Blacksburg has never seen before. We were present at the last Commencement, and came

away with a thankful heart that there was yet so much life left in the old land.

When shall we be able to send such words of cheer back across the Potomac?

Here is an institution offering only a farmer's and a mechanic's course; its endowment less than that of our Maryland school; its pupils numbering over 250, and scores turned back because there is no room for them.

What is the secret? The Trustees and the Faculty have faith in their work, and in the appreciation by the industrial classes of the useful sort of an education their college affords.

### U. S. Commissioner of Agriculture.

General Wm. G. Le Duc, of Minnesota, has been appointed to replace Judge Watts as head of the Department of Agriculture at Washington. He is a graduate of Kenyon College, Ohio; emigrated to Minnesota in 1850, and served during the war in the Federal army. Since the war he has been engaged in developing the railroad, manufacturing and agricultural interests of his State. His appointment is said to be due to his scientific attainments, practical knowledge of agriculture, intimate acquaintance, from close personal observation, with the diversified agricultural features of the whole country, and remarkable executive ability. The Southern people, especially, it is said, may count upon his intelligent and sympathetic co-operation with them in the revival of their crippled industries.

### Patrons of Husbandry in Maryland.

W. Secretary Edw. Hall of B., issued, June 4th, his annual circular of the Maryland State Grange, and promptly favored us with a copy. The last grange organized in the State is numbered 169—Mantua, Baltimore Co., Md. There are thirteen County or District Granges. The annual session of the State Grange will be held in Baltimore on Tuesday, 11th December.

The following are the present officers of the State Grange: Master, Joseph T. Moore; Overseer, Levin L. Waters; Lecturer, James S. Robinson; Steward, John W. Corey; Asst. Steward, Thos. S. Iglehart: Chaplain, Joseph Barlow; Treasurer, Jos. N. Chiswell; Secretary, Edw. Hall of B.; Gate-Keeper, Wm. Hepbron; Ceres, Mrs. Jos. T. Moore; Flora, Mr. J. E. Wilson; Pomona, Mrs. H. S. Condon; Lady Asst. Steward, Mrs. J. W. Corey.

Executive Committee: Thos. F. Shepherd, Chairman; George Thomas, Secretary; Col. J. R. Emory, Gen. E. L. F. Hardcastle, P. A. Bowen, Sam'l Hinks. State Agent: Henry O. Devries, cor. Camden and Sharp sts., Baltimore.

### The Marlboro' (Md.) Gazette

Has just entered upon its forty-second year, and is as prosperous as ever. It is now published by Mr. I. S. Wilson, the son of our old friend Geo. W. Wilson, in whose hands we hope it will continue to thrive.

### Fertilizers for the Fall Seeding.

Our advertising supplement shows signs of preparation for the autumn campaign. A number of the oldest houses will be found represented, as usual.

Messrs. J. J. Turner & Co. submit a letter from Frederick, showing the result in that celebrated wheat-growing county of their Excelsior.

Messrs. R. W. L. Rasin & Co., Wm. Whitelock & Co., (who have reduced the price of their Vegetator,) B. M. Rhodes & Co., the Maryland Fertilizing Co., also present new announcements of their several products. Besides these, will be noted the regular advertisements of Messrs. Slingluff & Co., R. J. Baker & Co., the Piedmont Guano Co., F. C. Grange & Co., Hobson, Hurtado & Co., J. J. Barrill, John Bullock & Son, Joshua Horner, jr., & Co.

### S. C. Clover, Orchard Grass and Wine.

Mr. John Witherspoon, of Society Hill, S. C., a gentleman who has long been a friend and correspondent of the *American Farmer*, but the pleasure of a personal acquaintance with whom we have never had until his recent visit to this city, left with us a specimen of clover and orchard grass,—a fair sample cut from the field of one of his neighbors. They measure quite five feet in height. The crop of clover from one and a half acres was ten tons. This is certainly a creditable showing.

By the same hands we were favored with a bottle of Ruby Muscatel wine made by Mr. J. J. Lucas, of Society Hill, S. C.,—a wine which, we think, will compare favorably in every respect with any domestic wine we have ever tasted. This is an industry which should be encouraged if the products are generally of so high a character.

### Genl. Giddings' Vineyard.

We spent recently a delightful day at this gentleman's Severn Vineyard, near Annapolis. This is comparatively a new place, beautifully located in immediate proximity to the ancient capital of Maryland, near the Naval Academy and adjoining the handsome grounds of the United States Marine Hospital. The neat dwelling, commodious and conveniently arranged, is situated so as to command a charming prospect, and the farm combines a variety of soils, ranging from the lightest sand to a stiff clay, and, except one short line of fence, is surrounded by navigable water.

This seems the natural retreat of Pomona. All fruits do well. Contrary to the preconceived notions of some, the grape grows and bears luxuriantly here on the tidewater. Peaches flourish, of course, and an orchard of apples, mainly of Southern late-keeping varieties, is in most prosperous condition. Small fruits thrive as well, and for all of them a good market is found in the neighboring city.

Most attention is now paid to grapes, and the vineyards are being extended yearly. So engrossed, indeed, is the General with his vines and wine-making that he is anxious to dispose of a portion of his farm,—that on which the house is placed,—comprising orchards, a small vineyard, &c., and surrounded by a beautiful hedge—and abandoning the culture of the smaller fruits, confine his operations more exclusively to grape-growing. The opportunity offered of securing so charming a country home, near a city boasting many attractions of society, easy accessibility, libraries, educational institutions, &c., is one not frequently met.

We have never been in a vineyard in better condition. The bearing vines are trained, not to the ordinary wire trellises, but to stakes; this arrangement allowing of cross-cultivation, and, of course, largely diminishing the necessity of hand-hoeing. Either two or three stakes are used, and their cost, in most sections, is considerably below that of posts and wire.

The vines in the young plantations are allowed, for the first year, to grow at will; the second year the two strongest canes only are permitted to grow; and the third year they are trained to the stakes.

The kinds most grown are the Ives, Concord and Clinton. The Catawba, formerly a great favorite, has been largely discarded from its tendency to mildew. The more recent plantings are of the white grapes, such as Martha and Gœthe; and the results of trials of the Elvira are looked for with great interest.

General Giddings is very desirous of seeing others near him engage in the business, and some persons are already doing so to a considerable extent. This will serve to attract more attention to this as a grape-growing region, and will secure the advantages that come from associated effort.

## The Crops and Prospects in Georgia.

From Dr. Thomas P. Janes we have his consolidated Crop Report for May, 1877.

It appears that corn, owing mainly to the cool dry weather, is below the average,—being about 94 per cent. This condition has improved since the 1st of June by good rains which have fallen.

Oats were injured by the May drought, and were winter-killed,—their condition being 81 per cent. of an average. In Northern and Middle Georgia the preference is almost evenly balanced between the winter-grazing and yellow and red rust-proof, as to hardiness. In other sections the Irwin rust-proof has greatly the preference. The average condition of spring-sown oats is represented by 80 per cent. of an average.

Wheat is reported considerably over an average in those sections—North and Middle Georgia—where it is most grown. The general average of the *sections* is 103; but the correct average, due allowance being made for the circumstances already alluded to, would be about 107, or 7 per cent. better than an average crop. Several reports of comparatively extraordinary yields have been received. One correspondent, in Randolph county, reports yields, respectively, of 27 and 22 bushels per acre, and an average for the county of *fifteen* bushels! This is a remarkable result in a section of the State that has never been considered as adapted to the production of wheat, and is due chiefly to the peculiarly favorable condition, as to moisture and temperature, which prevailed during May, and indicates the great importance of discovering a rust-proof variety which shall make the crop more independent of these favorable circumstances.

Of the varieties distributed with the view to test their rust-proof character, correspondents generally report the *Dallas* as exempt from rust; one, however, says: "not more so than others, and ten days later than *blue-stem*." A small quantity of a new variety—the *Nicaragua*—was sent out, and the reports are unanimous that it is *rust-proof*." The season, however, has been very favorable for wheat, and the test has not been very severe. The average injury from rust is reported at 4 per cent.

Cotton.—The stand of cotton in North Georgia is far below an average, being only 46. A great part of the crop was planted jugt at the beginning of the dry weather. In the other sections the stand is 93 per cent. of an average.

The size of the plant is much below an average, but the fields are free from grass, and the warm growing weather will soon make great improvement in the prospect. *Cut worms* have been very destructive to the young plants, notably in Lowndes and Macon counties, necessitating *planting over* a large part of the crop in Lowndes.

The peach prospect is 111, or 11 per cent. better than an average. The attention of farmers is again directed to the importance of providing means for rapidly drying the surplus fruit. The apple and pear prospects are inferior in North and Middle Georgia, and good in the other sections. Irish potatoes are a little below the average. The pork prospect, compared with last year, is increased six per cent. Cholera has destroyed five per cent. of the stock of hogs.

Labor is very generally reported as equal to the demand, and more efficient. Supplies good, and farmers generally in better condition than at any time since the war. On the whole, the general condition of the farming interest in Georgia is encouraging, and farmers are gradually, but surely, attaining independence and prosperity.

## How it works in Kansas.

The *Industrialist*, a spirited little weekly paper published at the Kansas Agricultural College, thus sums up what was achieved there in the session of '76. The former plan of the college was changed, and it is now a place for thorough and practical agricultural and mechanical education.

The year just closing has been, in all directions, the best ever experienced by the Agricultural College. A greater number of students has been in attendance, namely, 303, being an increase of twenty-eight per cent. over the enrollment of 1875. Entire unanimity and splendid vim have characterized the Faculty, and better work has been done by the students than ever before. But one case of discipline has occurred, and the general spirit on all sides and by everybody connected with the College has been admirable. The Mechanical department has cleared its expenses; the Horticultural department has more than done so in spite of the grasshoppers; and the Farm department has made $1,200 over all outlays.

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## Baltimore Markets—June 29.

*Quotations given below are Wholesale Prices:*

**Breadstuffs.**—*Flour*—Market firm and stiffening, and demand fairly active. We quote Howard Street Super $4.00@5.00; do. Extra $6.50@7.50; do. Family $8.25@9.50; Western Super $4.00@5.00; do. Extra $6.50@7.50; do. Family 8.25@9.25; City Mills Super $4.00@4.75; do; standard Extra$6.00@7.00; do. medium Extra $7.75@8.00; do. Rio brands Extra $9.00; Fancy brands patent $9.50@10.00; Fine $4.25@4.50; Rye Flour $4.75@$5.00; Corn Meal, City Mills, ₩ brl., $3.30.

**Wheat.**—Small lots of the new crop are coming into market, and demand for it is active at full prices. We quote as follows, viz: Southern Red, old, $1.85@1.90; do. do. new $1.65@1.90; do. Amber, new, $1.95@$2.00; do. white, do., $1.85@2.00; Pennsylvania Red, old, $1.90@$1.95.

**Corn.**—Supply of Southern light, limiting operations: Western more active. We quote Middling 12@12⅛; Low Middling 11¼; Strict Good Ordinary 11¼@11⅜; Good Ordinary 10¾@11; Southern White 66@67 cts.; do. Yellow 62; Western steamer, spot, 56½; do. mixed do. 58⅞; do. do., July delivery, 58⅞; do. do. August do. 60¾.

**Oats.**—Market steady, though quiet. Receipts light. We quote: Western mixed 41@45 cts.; do. bright 46@47; Southern, fair to good, 40@45; do. prime 46@48; Pennsylvania 47@48.

**Rye.**—75@77 cts., but the latter is an extreme price, 75 cts. being the top of the market for prime.

**Cotton.**—Market strong and active.

**Hay and Straw.**—Dull at following quotations: Hay—Cecil County $17@19; Prime Pennsylvania and Maryland $14@15; Western $15@16; Mixed $14@15; Clover $11@12. Straw—Wheat $7@8; Oats $9@10, and Rye $13@14.

**Live Stock.**—*Beef Cattle*—Fairly active; prices ranging as follows: Best on sale $6.12@6.75; generally rated first quality $5@6; medium or good fair quality $4.50@5; ordinary thin steers, oxen and cows, $3@4.25; general average of market $5.62. Milch Cows—Supply light. Sales at $30@55 ₩ head.

**Swine.**—Supply fair and demand moderate. We quote: 6¼@6¾ cts. for common to fair; 7@7¼ cts. for best grades net.

**Sheep.**—Demand limited. We quote butcher Sheep at 4@4¾ cts.; extras 5 cts. ₩ lb. gross. Lambs 4@5¾ cts., and choice 5¾ cts. gross.

**Provisions.**—Firm but quiet. We quote prices as follows: Bulk Shoulders, packed, 6 cts.; do. C. R. Sides packed, 8; do. L. C. Sides, do., 7½@7¾; Bacon Shoulders 6½; do. C. R. Sides, do. 8¼@8½; do. Hams, sugar-cured, 12@13; do. Breasts 9½; Lard, Refined, tierces, 10@10¼; Mess Pork, ₩ brl., $14.50@15.00. *Butter*—Dull and heavy; Western, choice, fresh grass, 15@17; N. Y. Prime 16@18; *Cheese*—Eastern, prime to choice, 10¾@11¾; Western, choice, new, 10@10½. *Eggs*, 17 cts. *Poultry*.—Spring Chickens $2@3; old fowls, $3@3.50 ₩ dozen.

**Tobacco.**—Receipts large. There has been for a week an active movement in Ohio, but Maryland has been comparatively quiet,—the French contractors having, says the *Journal of Commerce*, pretty much cleared the market of such lots as are offering, and the greater part of the stock remaining is of undesirable quality, for which the market is very dull. We quote: Maryland, inferior and frosted, $2.50@3.00; do sound common $3@$4; do. good do. $4.50@6.50; do. middling $6.50@7.50; do. good to fine red $8@10; do. fancy $10@15; do. upper country $4@20; do. ground leaves, new, $3@8.

**Wool.**—Tub-washed 40 cts.; unwashed 30@31; Merino do. 23@25; fleece-washed 35@37 cts

## The Bickford and Huffman Drill.

Elsewhere will be found the usual annual advertisement of Col. H. P. Underhill, of this reliable machine, which came out of the centennial campaign, as will be seen, with renewed laurels.

BUCKEYSTOWN, *June 25th*, 1877.

MESSRS. J. J. TURNER & Co.

*Gentlemen:*—As far as heard from, every one that used your "Excelsior" on wheat last year are well pleased, and many say, after experimenting with the different kinds of fertilizers offered on the market, that "they will hereafter use your 'Excelsior' exclusively." The following gentlemen are a few of the many supplied by us last fall:

Wm. Lawson & Bro., Urbana, Frederick Co., Md.
Benj. W. Duvall, " " " "
Wm. Trundle, " " " "
Thos. A. Smith of T., " " " "
(Who has, it is said, the finest crop of wheat in the county.)
David T. Jones, Buckeystown, Frederick Co., Md.
Chas. T. Thomas, " " " "
Franklin C. Thomas, " " " "

We do not think certificates of the efficacy of "Excelsior" of any great value. Its reputation is thoroughly and satisfactorily established; and, in our judgment, if its present high standard is maintained, it is all the farmers could ask or desire. We expect the coming season to have a fine trade.

Yours, respectfully,
DAN'L BAKER & SON.

**$55 to $77** a Week to Agents. Samples FREE. P. O. VICKERY, Augusta, Maine.

**RIFLES, SHOT-GUNS, REVOLVERS,** sent C. O. D. For examination, all charges paid. No risk. No humbug. Write for catalogue. Address GREAT WESTERN GUN WORKS, Pittsburgh, Pa.

## NEW ADVERTISEMENTS.

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*Maryland Fertilizing Co.*—Ammoniated and other Phosphates.
*W. Whitelock & Co.*—Whitelock Vegetator.
*Wm. Corse & Sons.*—Fruit and Ornamental Trees.
*F. W. Chiles.*—Cattle, Sheep and Hogs.
*R. W. L. Rasin & Co.* Chemical Fertilizers, &c.
*J. J. Turner & Co.*—"Excelsior."
*J. J. Turner & Co.*—Ammoniated Super-Phosphate.
*B. M. Rhodes & Co.*—Orchilla Guano.
*H. P. Underhill.*—Bickford & Hoffman's Grain Drill.
*Great Western Gun Works.*—Rifles, Shot Guns and Revolvers.
*P. O. Vickery.*—Agents wanted.
*C. J. B. Mitchell.*—Cotswold Sheep.
*Fred'k H. Smith.*—The Pocket Geologist and Book of Minerals.
*A. J. Nellis & Co.*—Fencing for Residences, &c.
*Henry P. Underhill.*—Bickford & Huffman's "Farmer's Favorite."

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# FARMER'S FAVORITE.

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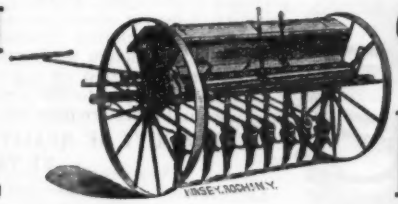

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Within the last ten years the progress of discovery in every department of knowledge has made a new work of reference an imperative want.

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### Geographical Knowledge

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The great political revolutions of the last decade, with the natural result of the lapse of time, have brought into public view a multitude of new men, whose names are in every one's mouth, and of whose lives every one is curious to know the particulars. Great battles have been fought and important sieges maintained, of which the details are as yet preserved only in the newspapers or in the transient publications of the day, but which ought now to take their place in

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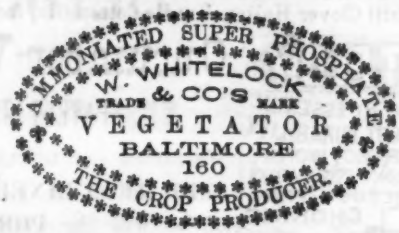


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☞We ask Farmers to test its value by the side of any Manure they may apply.

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☞THE SIMPLEST, BEST MADE AND LIGHTEST DRAFT MACHINE ON THE MARKET. ONE-FOURTH OF THE MOWERS AND REAPERS MADE IN AMERICA ARE "BUCKEYE." THE "BUCKEYE" IS A FRONT CUT MACHINE.

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The most popular Thresher with Threshmen and Farmers. It never fails to do good work. A Threshman who buys a Sweepstake is sure of getting work for it, when those having other Threshers cannot.

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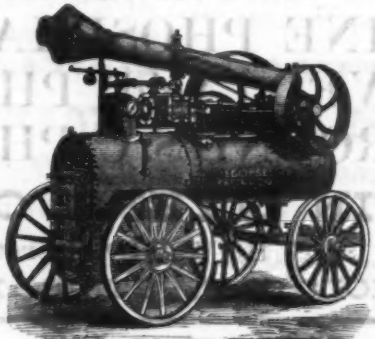

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OF STRENGHT, DURABILITY,
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LIGHT DRAUGHT,
FREEDOM FROM
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WE SOLICIT A TRIAL, AND WARRANT EVERY PLOW
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WITH PATENT CAST-IRON CYLINDER,

Warranted not to cut out like the **GALVANIZED IRON-LINED CYLINDERS**, or scale off as will the **PORCELAIN-LINED CYLINDERS.**

Every Pump Provided with Patent Anti-Freezing Attachment.

**THE BEST IS THE CHEAPEST.**

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FOR MAKING SUPER-PHOSPHATES and FERTILIZERS.

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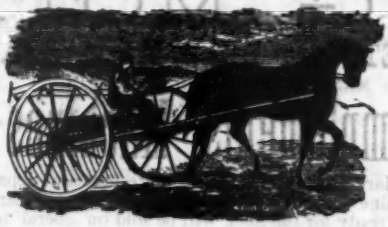

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A FULL AND FRESH ASSORTMENT OF GARDEN SEEDS FOR THE YEAR 1877. ☞ A call is solicited.

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The largest stock and greatest variety of fruit and ornamental trees, foreign and domestic, to be found in the United States,—comprising apple, peach and pear trees, (standard and dwarf) evergreen and shade trees; all varieties of grape vines, currant, gooseberry, and blackberry bushes, strawberry plants, etc., etc.

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PRICES VERY LOW. CATALOGUES FREE.

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Send for Price-List. **Cor. Pratt and President Sts., Baltimore, Md.**

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**Lime, Bricks, Sash and Mill Work.**

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Lightest draft most durable, simplest, most economical and perfect in use. Wastes no grain, cleans it ready for market.
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Tea Sets, Waiters, Ice Pitchers, Butter Dishes, Cups, Goblets, and Communion Ware.

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**NONE GENUINE** unless bearing the following **TRADE MARK:**

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It is highly recommended by Rev. N. B. Ousley, A. Means, D.D., LL.D. and James B. Park, Esq., honored names in Georgia, with all who have given it a trial.

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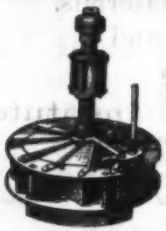

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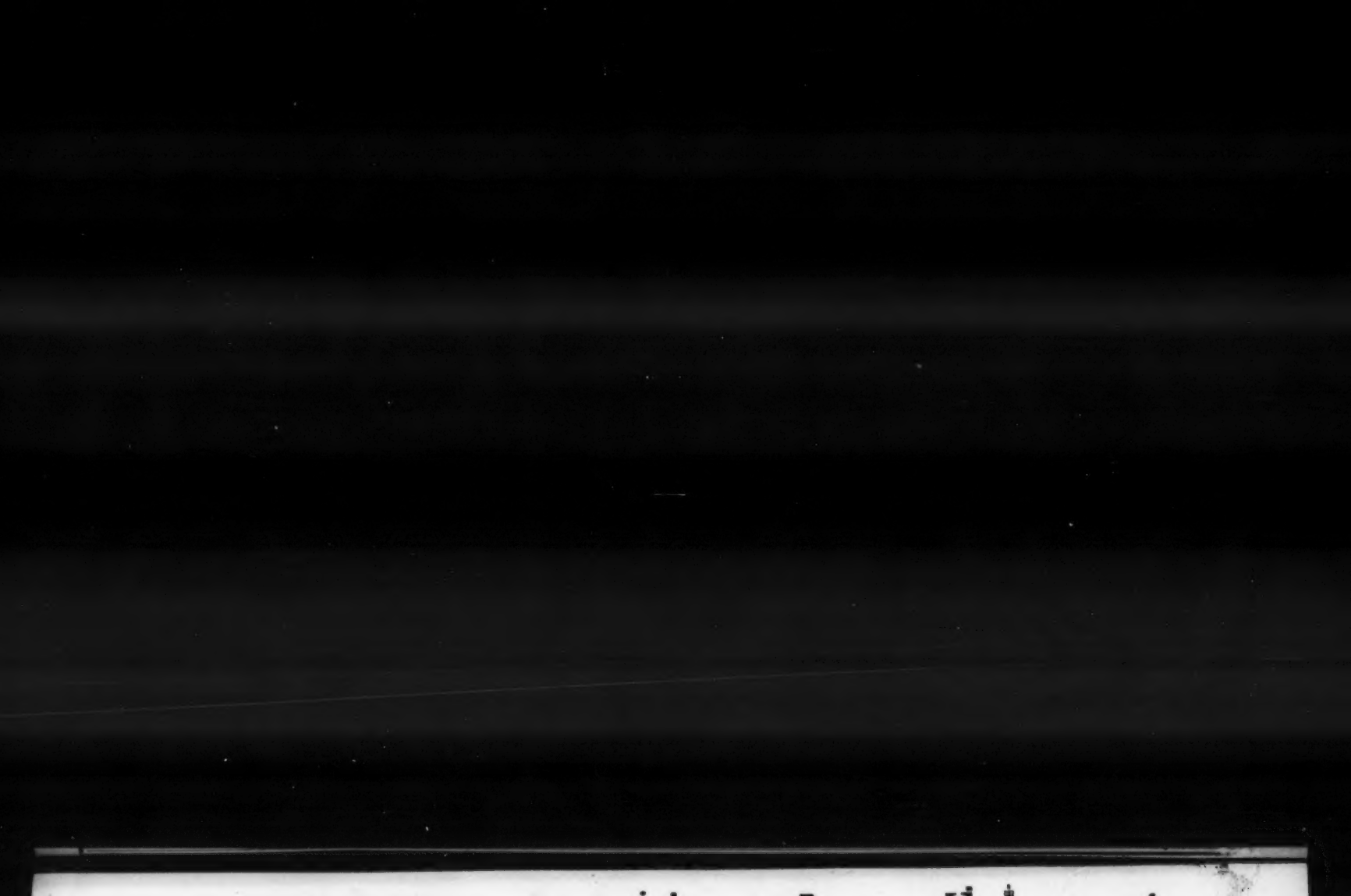

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